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INTERNATIONAL ABSTRACT OF SURGERY

JANUARY 1919

COLLECTIVE REVIEW

THE SURGERY OF THE GALL-BLADDER AND BILIARY TRACT

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In the review of the literature here presented every article of value which has been published within the last four years has been carefully read and abstracted. Many papers contained nothing new or of special interest being merely quotation from other articles with perhaps a case or two which had come under observation. These have not been included in the review. Also many of the foreign journals, particularly the German and Austrian, are not at the present time available and articles in them have of necessity been omitted. However practically the entire field has been covered in its different aspects and all the newer ideas both theoretical and practical have been included.

In order to maintain some semblance of system and to consider the different phases of the subject in a more or less logical sequence the following classification has been adopted: (1) Anatomy and Physiology; (2) Etiology; (3) Pathology and Bacteriology; (4) Symptomatology; (5) Diagnosis; (6) Prognosis; (7) Treatment. This form has not been followed strictly because in considering any one phase it is necessary to associate it with others, but in the main this scheme has been carried out. Many individual cases have been abstracted in detail since this seemed the best plan for emphasizing certain important points.

ANATOMY AND PHYSIOLOGY

It is always well occasionally to review the salient facts in the anatomy and physiology of any organ with which we have to deal surgically. For this reason the essentials of these pertaining to the gall bladder will be taken up

The normal gall bladder is pear-shaped, 3 to 4 inches long, projected downward, forward and to the right to the anterior margin of the liver. It consists of a fundus, body and neck, is fastened to the liver by connective tissue and lies in the fossa vesicalis. The fundus extends beyond the anterior margin of the liver in the region of the incisura vesicalis. The position of the fundus is usually at the lower edge of the ninth costal cartilage on the outer border of the right rectus muscle. The fundus rests on the transverse colon and farther back on the upper end of the descending duodenum or pylorus. The neck usually extends into the posterior and upper part of the vesicle, forming a close to the transverse fissure. The body below forms a small pouch which covers the common duct. The neck continues in a spiral curve into the cystic duct. On the inner surface of the neck is a screw-like valve which extends through the cystic duct (valvula Heisteri) (63). The capacity of the gall bladder is from 1 to 1½ ounces. The cystic duct is from 1 to 3 inches long and 2 to 4 mm in diameter. Its course is toward the left. It usually joins the hepatic duct at an acute angle to form the common duct. The ductus choledochus is the common excretory duct of both liver and gall bladder and conveys the bile to the duodenum. It is 3 inches long and ¼ of an inch in diameter. The pancreatic and common ducts open into a small pouch in the wall of the duodenum, the diverticulum of Vater which is 6 to 7 mm in diameter and opens into the duodenum on the papilla of Vater situated from 2 to 4 inches below the pylorus on the posterior internal wall near

the junction of the middle and lower third. The common hepatic duct is formed by the union of the right and left bile duct from the liver. They unite at an obtuse angle at the right end of the transverse duodenum usually where they emerge from the liver. The average length of the hepatic duct is 7.5 cm and its diameter 4 mm. In 1883, Oddi described a sphincter composed of plain muscle fibers at the distal end of the common duct. This sphincter prevents the continuous flow of bile into the duodenum and keeps up a certain pressure in the gallbladder and biliary tract.

Jull and Mann (34) made experiments on cats and goats removed the gall bladder and noted the effect on the liver. They found that the pressure in the common duct is greatly reduced a few months after cholecystectomy and that in all cases especially in cats and dogs the extrahepatic duct was greatly dilated. They counted for this on the assumption that immediately after cholecystectomy the sphincter of Oddi remains normally contracted attempting to maintain an even flow of bile into the intestine and that therefore in the absence of the gall bladder such according to C. H. Mayo and Dyer a tetension of the duodenum is actually present in the liver duct. In the early dilatation. Later the sphincter becomes paralyzed for tension with the result that the common duct pressure is greatly reduced the liver remaining dilated. The pancreatic duct in no way was enlarged. Their final experimental observation was that after cholecystectomy the common duct type of pressure was much lower than normal the dilatation of the liver remaining. In contrast to the definite liver whether or not the sphincter is responsible for the dilatation the experimental dilatation in three ways: (a) by comparison of pressure throughout in normal and after cholecystectomy; (b) by dissecting the duct of common muscle fibers in the duodenum all at the time of cholecystectomy; (c) by excising the sphincter through a duodenal incision. The experimental dilatation demonstrated that the sphincter of Oddi was responsible for the dilatation after cholecystectomy. In a few cases the tumor of the cystic duct dilated also and that this dilatation was explained by the fact that dilatation of the common duct. The liver and pancreas in all the cases remained normal. The practical application of the experiments is that cholecystectomy will probably cure pancreatitis by relieving the common duct pressure and thereby the possibility of bile entering the pancreatic ducts. Mann comparatively studied animals having a gall

bladder with those not having one, interest in the former having practically no pressure within the common duct in spite of the fact that the sphincter of Oddi is anatomically the same. The normal pressure in the common duct is from 100 to 200 mm of water.

Edendrath and Dunlavy (42) quote Oddi de Woot and others as observing dilatation of the cystic duct after cholecystectomy on animal. In their own experiments where the cystic duct was not removed it had in the course of from six weeks to three months dilated to form a new bladder. Haberer found in his experiments that if the cystic duct was left behind the animal developed a newly functioning gall bladder. Hacker reported such a case in which gall stone formation had taken place. Contrary to the above observation J. B. Deaver (5) says that in more than 1,800 operations on the bile passages he has not met with a single case of dilatation of the stump of the cystic or of the common duct after cholecystectomy and therefore believes it does not exist. Wohl (167) reports an autopsy four weeks after cholecystectomy in which the common duct was twice its normal size.

The muscular fiber in the gall bladder are found in the connective tissue of the elastic type according to Poirer (9) whereas Meltzer (106) says that the gall bladder is well supplied with muscle. Both admit that the latter author has made observation which demonstrate that the muscle fiber in the wall of the gall bladder are antagonistic to those in the sphincter of Oddi. Stimulation of the peripheral end of the splanchnic nerve causes at the same time a contraction of the gall bladder and an inhibition of Oddi's sphincter. Stimulation of the vagus causes exactly the opposite effect. The gall bladder in health may expand even at times its capacity without consequences on the part of the patient but if cholecystitis or adhesion are present the patient at once becomes conscious of even slight distention.

A regard to the normal arrangement of the cystic and common duct according to Seelig (146) and Werelius (62) the cystic duct normally enters the hepatic at an acute angle forming the triangle of Calot (Rube). This triangle is bounded by the cystic duct on the right side the hepatic duct on the left and the cystic artery above the latter forming the base. This triangle is about 33.3 per cent of the cases. In 5 per cent the cystic runs parallel to and in contact with the hepatic duct and is firmly bound to it. In one third of the cases the cystic duct is adherent to the hepatic and winds around it toward

the right before opening into it. In those cases in which the cystic runs parallel with or winds around the hepatic duct it would be difficult to tell by palpation in which a stone was located also a stone in the cystic duct might in this location cause pressure on the hepatic thus producing the symptoms of obstruction of the common duct. W. J. Mayo (10) says that the juncture between the cystic and hepatic ducts does not occur at any fixed point or in any definite manner but varies in different individuals. The juncture usually occurs about three fourths of an inch from the intrahepatic portion of the hepatic duct. The cystic artery usually passes behind and not along the cystic duct. As regards the hepatic duct in 20 per cent of the cases there are three instead of two and in 45 per cent there are five hepatic duct branches.

The relations of the duct, hepatic artery and portal vein within the gastrohepatic omentum should always be borne in mind. The union between the cystic and hepatic duct takes place within this peritoneal fold. Lower down the common duct is in the edge of the gastrohepatic ligament with the hepatic artery 1 mm to the left and the portal vein behind the two. There are always three and sometimes as many as six lymphatic glands along the common hepatic and cystic ducts and this should be remembered when palpating for stones or attempting to determine the presence of cholecystitis.

Harrigan (10) adopts the following classification of Testut in dividing the common duct (a) the supraduodenal 3 cm long (b) the retro duodenal 20 to 25 mm long (c) the pancreatic 20 to 5 mm long (d) the intrapancreatic portion. The entire common duct averages 6.5 to 8 cm in length. In 75 per cent of the cases the pancreatic portion is completely enclosed in pancreatic tissue. C. H. Mayo (98) says that in 6 per cent of persons the common duct passes through the head of the pancreas while in 38 per cent the duct does not enter the pancreas at all.

Schrichner (143) writing on anomalies says there have been reported 5 cases of double gall bladder each with its own cystic duct 1 of bilobed gall bladder and 1 of diverticulum communicating with the cavity. These latter may be congenital or inflammatory. One case of congenital hour glass gall bladder has been recorded and 16 cases of intrahepatic gall bladder mostly in infants. There are 13 cases in which the gall bladder has been found to the left of the falciform ligament 11 of transposition of the viscera and 8 cases of floating gall bladder each of

which had a distinct mesentery and a wide range of mobility. C. H. Mayo (98) has found in the literature 5 cases of congenital absence of the gall bladder. It is normally absent in the horse elephant rhinoceros deer and mouse (99). In these animals the duct is composed of connective and elastic muscular tissue and functions like a gall bladder.

A few words in regard to the pancreatic ducts may not be out of place because pancreatitis is so intimately associated with cholecystitis. Erdmann and Heyd (47) say that in 83 per cent of the cases the duct of Wirsung carries the entire pancreatic secretion and 1 per cent the duct of Santorini is the main duct while in 54 per cent the duct of Santorini may act as a substitute for the duct of Wirsung. This is of importance because in certain cases the passage of pancreatic secretion may take place into the duodenum with almost complete biliary stasis.

This brings one to a consideration of the functions of the gall bladder which are by no means definitely established up to the present time. Of course the idea that the gall bladder acts as a reservoir for bile is long since *passé*. C. H. Mayo and Deaver think that it acts as a tension bulb to take increased pressure away from the liver thus preventing damage from back pressure. It also tends to keep up a continuous flow of bile into the duodenum by its contractions which occur from 8 to 10 times a minute. This pumping action is probably of great importance in digestion. Werelius (163) has shown by experiments on dogs that respiration plays a very important part in forcing the bile into the duodenum both from the gall bladder and hepatic duct. During inspiration he found there was a marked increased pressure in the gall bladder with undoubtedly a much lower pressure in the common duct at the same time. Thus the bile is forced from the gall bladder into the ducts and on into the duodenum. During expiration the intracystic pressure is greatly reduced and the pressure in the common duct increased. Consequently the bile flows into the gall bladder. In both instances the flow of bile is away from the hepatic ducts and toward the duodenum. C. H. Mayo (100) says that bile on its way from the gall bladder to the duodenum does not re-enter the hepatic duct as the latter becomes closed from the mechanical pressure caused by the acute angle at which the cystic enters the common duct. Bile which has once passed through the common duct and entered the duodenum cannot again enter the duct because of the peculiar arrangement of the duct

within the wall of the duodenum. Coffey has shown that the greater the pressure within the duodenum the more the duodenal entrance is closed (1) by the flattening of the tube in the wall of the bowel and (2) by the muscular cuff which guards the ampule of Vater. The hepatic and common duct are muscular tubes and are functionally able to overcome the phintor of Oddi and like the biliary mucosa in the intestine. In other words they are able to take up the function of the gall bladder in its remission.

However the gall bladder has other functions than the maintenance of equal pressure. White (16) quotes Schröder and the belief in that it regulates the muscular movement with the bile in its certain physiological properties. Lurani considers the gall bladder as a regulator of the flow not only by the thick muscular contraction but also through the contraction of a thin muscular coat and that the ampule of Vater. Hamman has held that the bile of the gall bladder is eight times richer in solids than that from the liver. In man the bile contains bilirubin, biliverdin, cholestanol, cholesterol, cholestrin, mucin, from the gall bladder, fatty matter, trace of inorganic salts, calcium, phosphorus, chlorides, sodium, potassium and magnesium and iron. Water is about 5 per cent. The composition of the bile is of great interest in the formation of gall stones and the detection of them by X-ray. (15) About one ounce of bile is delivered and one ounce of retention including the pancreatic juice through the duodenum in a day. Nager calls the muscular fundus of the bile by the gall bladder. Shaw (148) says that the muscular natural pressure of the duodenum and bile is that the muscular contraction in the upper intestinal tract are of great importance from the standpoint of peristalsis. It has been shown by Fikene that bile mixed with gall bladder mucus is much injurious to the pancreas. Hence injection of the duct through the bile not only obviates the mucous but is the only indication of the bile in the gall bladder. Porter (141) says that bile during its stay in the gall bladder has all its cholesterol and taurocholate. He considers that the most important change is the occurrence of modification by a diminution of salts which makes it likely to produce acute pancreatitis if it enters the pancreatic duct.

The secretion of bile is stimulated by the ingestion of food and fluid. Judd (81) says that while the secretion of bile is continuous its output into the duodenum is not constant but coincides

exactly with the period of digestion in which the chyme is spurted from the stomach into the duodenum. Meltzer (106) states that the discharge of bile is lessened when the amount of chyme from the stomach is restricted and increased by peptones and albumoses.

According to Leede (89) the absorption of inorganic salts by the gall bladder makes it bile less destructive to tissues than liver bile. He believes there is a hormone secreted by the gall bladder into the bile which has a great influence upon the production of HCl in the stomach and thereby of secretion in the duodenum. Mead and the products of protein digestion increase the quantity of HCl and secretin and have the greatest influence on the production of bile. Ross states that animals without a gall bladder secrete about one third the amount of bile and pancreatic juice of normal animals.

Only found that after loss of function of the gall bladder 50 to 80 per cent of the cases showed acidity and achylia gastrica. He thinks the loss of gall bladder function disturbs the secretion of HCl. Porter (124) quotes Hohlweg as having found in 30 cases after cholecystectomy 43 per cent with diminution or absence of HCl. He decides from his review of the literature and personal observation that while the gall bladder is an important organ it is not a vital one.

Lothrop (94) says that bile from the normal gall bladder in man is usually sterile. It poses every little if any antiseptic quality and is a good culture medium for typhoid and colon bacilli. In upper intestinal lesions of the gastrointestinal tract the bile often contains bacteria and after ligation of the common duct in animals it invariably becomes infected. Potts (139) says that bile has no antiseptic properties. As long as it flows freely it has a tendency to wash away any bacteria that may be in the duodenum; but when it flows is obstructed bacteria may pass up the duct. Eubacteria eliminated by the liver are carried through into the intestine when there is no obstruction but if the latter exists they may be carried into the gall bladder and do damage. Bacteriological studies of 30 cases of cholecystectomy in the clinic of Ivosin showed the gall bladder and its contents sterile in 54 per cent, 57 per cent where there were large stones were present and 77 per cent where there were multiple small mulberry stones. His observation were that the symptoms of cholecystitis always follow and never precede stone formation bearing out his conviction that the stones are formed first and infection and cholecystitis come later.

That bile has no deleterious effect on the

tomach and performs its function equally well when passed into this organ as into the duodenum as shown by the experiments of Grey (64) who performed cholecystogastrostomy upon animals. He determined that the bile had no effect upon the acidity of the gastric contents the dogs remained in good health and three or four weeks after the operation digestion and nutrition were normal. Postmortem examination showed no changes in the gastric mucosa.

During the past few years considerable attention has been paid to the cholesterol content of the blood in cases of cholelithiasis with the object of utilizing it as an aid to diagnosis. Hesse (7) says that the presence of a rather definite quantity of cholesterol in the blood under normal conditions has been established. He places it at 0.012 to 0.018 gm in 1 ccm of serum. In various pathological conditions there may be an hypercholesterinæmia. The amount is increased during pregnancy, convalescence from typhoid fever, progressive arteriosclerosis, chronic nephritis, obstructive jaundice and probably in obesity and diabetes. Fever causes a reduction in the amount of cholesterol in the blood. Reimann and Magoun (130) state that cholesterol increases in the body fat with increasing age and persons over forty give a higher reading than those younger.

ETIOLOGY

Age and incidence. Lichty and Zurhorst (92) quote Hesse who studied the postmortem records in Petrograd. Among 17,402 necropsies performed in ten years there were 378 or 0.217 per cent of gall stone cases. From 19 European and American pathologic reports including 80,802 autopsies there were 4,848 or 6 per cent of gall stone cases. In these statistics the most frequent decade at which the patient came to autopsy was from sixty to seventy years and of these 4,848 only 16 per cent gave a history referable to the calculi. W. J. Mayo (101) rightly says that the old idea of gall stones without symptoms is a myth and every person having stones in the gall bladder will at some time or other have symptoms produced by them. There can be no question that this is true if all clinical histories are carefully analyzed. In Lichty and Zurhorst's report there were 614 cases of gall bladder and duct disease of which 193 or 31 per cent were operated upon and 421 not operated upon. Of these latter cases the average age of gall stone patients at onset and time of operation was as follows for women on set 30 years time of operation 43 years for men onset 4 years

time of operation 50 years. The average interval between onset of symptoms and operation was seven years.

Babcock (5) believes that inflammation of the gall bladder often develops between the first and second decades but escapes recognition until middle age. He reports a case of multiple gall stones in a girl fourteen years of age with acute pancreatitis and another in a boy fifteen years old with a gangrenous gall bladder. Clark (2) in his postmortem observations in the Panama Canal Zone found 21 cases of cholelithiasis under thirty years of age and 6 between thirty and forty years. One case was a male negro baby of four months who died of an acute enterocolitis in which 2 gall stones were found. Another was in a negro boy of four years who died of a wide spread pneumococcal infection. Deaver (3) in his report for 1914 cites 159 gall stone cases operated upon with an average age at time of operation of 44 years. In simple gall bladder disease it was 45 years in common duct stone 47 years and with pancreatic involvement 41 years. He says the decade of greatest frequency in all cases of gall bladder disease is from 40 to 50 years though he believes that many cases begin in early life and remain relatively dormant until later. The acute infectious diseases of childhood may be the real cause of the trouble. In his series the average duration of symptoms before operation in all cases was eleven months in simple and pancreatic cases three years and in common duct cases 30 per cent were from one to five months duration.

Peterson (119) in an analysis of 1,066 operations for pelvic disease found gall stones in 12.66 per cent. As regards age 97 per cent were between sixty-one and seventy years. They were much more common after forty years than before. He believes that age and not the associated disease is the determining factor in gall stone formation. Buchanan (1) reports among his 300 operated cases a girl of five years with empyema of the gall bladder and another of nineteen years with gall stones and acute appendicitis. Hubbard and Kimpton (77) in a study of 400 cases of diagnosed cholelithiasis during six years in the Boston City Hospital found stones in 6 that were operated upon of these 54 were males and 172 females. He set in a postmortem study of a large number of cases cited by Lichty and Zurhorst found the proportion of males to females was as one to seven. In their own tabulation collected from the practice of 4 different surgeons where 31 per cent of 614 cases of gall bladder and duct disease were

operated upon 251 *vera* males and 303 female. Of the gall stone cases 163 were males and 83 females. In Clark's Panama Canal Zone report there were 3 males and 22 female this proportion being accounted for by the fact that the majority of the patient *vera* male. In Deaver report of 150 cases 85 per cent of the simple gall stone case operated upon and from 60 to 100 per cent of the complicated *vera* were females. The largest number of male occurred where there was pancreatic involvement.

De Lannan (36) presents some interesting statistics in regard to the rarity of gall stone disease among the natives of Java. In his surgical clinic he found but 1 case among 15,000 patients and this was that of a native of the East Indies while there was not a single instance among the 40,000 outpatients. At the hospital at Sourabaya there were only 3 cases among 67,500 patients and at Samarang there were 8 cases among 4,000. In 1914 through out the whole of Java there were only 3 cases of gall stone among 580 patients. The cholesterol content of the blood of the natives is very low.

In regard to the preponderance of cholecystitis with or without stone in females various reasons are given by different observers. Deaver (7) gives the following reasons: (a) sedentary habits (b) position of the abdominal organ especially the liver causing kinking of the duct and (c) pelvic infections. He noted the common duct case were more common after the menopause. Peterson (119) states that the influence of pregnancy on the production of cholecystitis is accounted for by the pressure of the enlarged uterus on the liver and bile passage causing stagnation. According to Rovsing (141) pregnancy favors a concentration of the bile which he believes is one of the most important elements in the production of gall stones. Mayo (98) quotes Larras as having demonstrated that the bile of pregnant women contains an increased amount of cholesterol and that infection during this period is important in accounting for the fact that 4 out of 5 cases of gall stones occur in women. Tilton (154) also says that the bile in pregnant women contains four times as much cholesterol as in other persons. This fact with lack of exercise and constipation among female throws the vast majority of cases among women who have had children.

Typhoid fever. The importance of typhoid fever in the etiology of cholecystitis is unquestioned by all observers but it is still not certain whether the bacilli enter the gall bladder with the bile excreted through the liver cells or attack it from

behind through the systemic circulation. According to the theory of Pennington (137) the latter would seem to be the correct interpretation and the bacilli which are always present in the blood in typhoid fever cross the infarcts in the gall bladder wall and enter the cavity of the bladder. This theory seems to be supported by the analogy in other locations where the mucous membranes serve as a protector against surface infection. However this is not always the case as for example gonorrheal conjunctivitis gonorrheal urethritis diphtheria and many other infections of the mucous surface.

In Lichty and Zuercher (9) report of 122 cases of gall stone disease only 21 gave a history of typhoid and of 54 cases of cholecystitis 20 had had typhoid. Hubbard (76) quotes Oliver as stating that one necessary factor for the formation of gall stone is a widespread inflammation of the biliary tract due usually to the typhoid or colon bacillus and a second requisite is some obstruction to the outflow of bile from the gall bladder.

Wohl (167) believes that the bacteria playing the most important role in gall bladder disease are the typhoid paratyphoid colon bacilli and streptococci. He quotes Adams as believing that bacteria enter the gall bladder through the portal circulation by way of the bile. Lothrop (94) says that although typhoid bacilli are present in the bile in typhoid fever they seldom cause cholecystitis. He thinks the modes of entrance of the typhoid bacilli to the gall bladder are as follows: (a) through the systemic circulation passing through the mucous membrane of the gall bladder into the bile (b) excretion into the bile directly by the liver cells from the portal circulation and (c) possibly an ascending infection along the ducts from the duodenum into the gall bladder. Typhoid bacilli may remain in the gall bladder months or years after an attack. In one instance twenty years ago recorded. He cites 864 cases of typhoid fever only 8 of which developed cholecystitis. In a series of 2,000 autopsies after typhoid fever at Munich there were only 5 cases of cholecystitis. Babcock (5) says that typhoid bacilli may remain in the gall bladder for thirty or forty years as shown by the fact that they have been found in the center of gall stones and in the depths of the mucosa in cases where the bile is sterile. In typhoid fever cholecystitis usually comes on in the third week of any bile stagnation during the course of the disease favoring the growth of the bacteria. He cites a series of 200 cases of acute typhoid cholecystitis in which gall stones were present in 20 per cent. Rhodes (131) reports 133 cases of cholecystitis

tomy 59 per cent of the cases among men gave a history of typhoid fever and 4 per cent in women Price (16) quotes Thomas who examined the record of 895 cases of typhoid fever Cholecystitis was a complication in only 1 He says this complication may occur at any time during the course of the disease but is most common between the tenth and thirtieth days

Paratyphoid Morley and Smith (108) in considering the epidemic of jaundice in Gallipoli in 1915 state that ascending infection in the biliary ducts was extremely common at that time in patients inoculated against typhoid fever A paratyphoid organism may ascend from the intestine to the gall bladder and produce a cholecystitis characterized by slight symptoms such as epigastric tenderness anorexia and headache Later however the virulence of the infection may be increased and cause gangrene of the gall bladder or the cholecystitis may persist and produce a descending infection of the common duct with jaundice They think that paratyphoid infections may play a much more important part than typhoid in febrile jaundice Burch (17) reports a case of acute suppurative cholecystitis in a man of twenty five in whom a pure culture of paratyphoid bacillus A was obtained from the pus The interesting features were (a) that no stones were present in the gall bladder (b) after cholecystectomy for two weeks the patient ran a temperature from 100 to 104 and (c) during this postoperative febrile course there was no leucocytosis

Routes of infection Regarding the probable and possible routes through which infection can be carried into the gall bladder the theory of Rosenow (137) is familiar He claims that streptococci from the throat nose and other foci of infection may have an affinity for the gall bladder stomach or appendix causing lesions in these organs After demonstrating the presence of bacteria of low virulence in cases of cholecystitis and appendicitis he thinks it reasonable to suppose that abrasions of the skin and mucous membranes may be important as a tria of infection The transmutability of streptococci has been established and different strains undoubtedly have an affinity for joints the gall bladder stomach and appendix Bacteria cultivated from the gall bladder will have a selective action on the gall bladders of animals in which they are injected In 68 per cent of 41 animals Rosenow was able to reproduce this selective action on the gall bladder even to the point of gall stone formation Strains developed from the gall bladder and carried through artificial media will often

change their selective action and produce gastric ulcers in animal This briefly is his theory which has claimed the attention of the entire medical and surgical world Undoubtedly it has a great deal of truth but with equal certainty it is greatly overrated in the etiology of the conditions named The practice of removing the tonsils draining and irrigating the sinuses and extracting all teeth that happen to show faint shadows at their roots which may or may not indicate a light suppurative process is undoubtedly wrong and the pendulum is certain to swing the other way as it always does in the case of medical theories that are not absolutely proven According to this theory the bacteria are carried through the systemic circulation to the gall bladder stomach appendix joints etc in the walls or lining of which they locate according to their selective action producing infected infarcts which in turn infect the cavities and their contents Infection in this way occurs from behind and the mucous surface is involved last Rosenow reasons that infection should never enter by way of the mucous membrane because it is a natural protector against infection just as the skin and mucous membrane of the mouth protect the underlying tissues This might be true if there were never abrasions breaks in continuity glands or crypts which could harbor micro organisms but unfortunately one cannot say that these conditions do not exist in the gall bladder and appendix Unquestionably there is such a thing as surface infection and it can occur in the gall bladder or appendix just as well as in the skin or mucous membranes of the mouth conjunctiva or urethra

Brubcock (5) divides infections of the gall bladder into four types according to the mode of invasion (a) portal infections where the bacteria enter through the portal circulation from any inflammatory processes along the alimentary tract in these cases they are excreted with the bile and pass into the gall bladder (b) ascending biliary infections through the ducts these occur particularly in inflammations and new growths involving the duodenum (c) hæmatogenous infections (d) contiguity infections where the gall bladder is involved by infection from adjacent organs

Clark (2) says that cholelithiasis stands second to gastroduodenal ulcers in order of frequency Out of 2 100 autopsies there were 2 cases of gall stones In all but 12 of these cases there was a history or anatomical evidence of old or recent inflammatory disease of the intestinal tract peritoneum or some abdominal organ

These observations of course favor the theory of portal circulation or ascending duct infection. Denver (33) states that in his experience with 100 biliary passages operation he convinced the appendix the focus of infection of all upper abdominal infective lesions. Nichol's experiments tend to show that infection of the gall bladder occurs through the bile from the liver though of course it is impossible to say that the wall of the gall bladder was not primarily involved. This biliary tract theory is supported by the fact that vaccination in animals favors the production of gall bladder lesions rather than preventing them, probably by increasing the elimination of organisms in the bile. Because in cases of septicaemia some organisms must be excreted in the bile and yet in the case of cholecystitis is rare.

Lund (93) thinks it undeniably true that bacteria may reach the interior of the gall bladder by the duct route in cases of duodenal ulcer etc. Judd (81) says there is no doubt that occasionally infection of the bile passages takes place through the portal circulation by way of the liver and hepatic duct. He thinks that rarely the infection may pass up from the duodenum through the common and cystic ducts.

Schilling (144) quotes Dieulafoy as saying that the gall bladder infection may be primary and appendicitis secondary. He cites some cases in which the latter apparently occurred.

Boas (1) believes that association with other nervous strain, financial and food conditions etc. are bringing to light many gall bladder diseases that had been heretofore undiagnosed. He does not however make it clear why the condition should light up or cause gall bladder infection.

Dennis (58) states that 50 per cent of the gall bladder cases operated upon by him were acute empyema. He says that when a stone becomes impacted in the pelvis of the gall bladder by drop does not develop but instead an empyema. He explains this by the fact that a stone in the pelvis produces pressure upon the cystic artery interfering with the blood supply and lowering the resistance whereas a stone impacted in the cystic duct produces no pressure on the cystic artery. Pöbner (134) points out that gall stones are much more frequent among the German who live largely on a proteid diet than among the Japanese whose diet is principally carbohydrate. He also says that cholelithiasis should always be suspected in men over forty who eat and drink freely and lead sedentary lives if they complain of upper abdominal trouble.

Horn (13) reports from the literature of cases of situs viscerum inversus with gall stones. He quotes Kehr, Liebold and Neulin as reporting 12 laparotomies for gall stones in which there was one similar case. Bland Sutton in 3000 abdominal sections covering a period of twenty years found the condition once. Kehr in ten years' experience with 10000 autopsies found it twice.

In discussing the etiology of gangrene of the gall bladder Janschoff (1) states that one or more of three underlying conditions are essential: (a) distention, (b) interference with the circulation, and (c) infection. The presence of a large stone in the cystic duct may in itself act in the three ways. Czerny points out that a stone in the duct may not only cause distention by plugging the duct but by direct pressure on the cystic artery may cause gangrene. Friederich says that in the majority of these cases there is a solitary stone either in the cystic duct or in the contracted gall bladder. The pressure of the stone may produce a gangrenous perforation. A cholecystitis in apparently healed gall bladders has demonstrated trephos occurring in the deeper layers of the mucosa. Infection in these cases may be lighted up by light trauma. In some cases of gangrene there is no stone; thus Kocher reports a case of a uterine aneurysm eight days after a ventral hernia operation and Corti in a woman three months pregnant without stone. In the case reported by the author the patient received a severe blow on the right side of the abdomen two weeks previously. At operation the gall bladder was gangrenous but no stones were present.

Status and concentration of bile. Roysing (141) believes that concentration of bile is of the greatest importance in the production of gall stones. This concentration occurs during the course of febrile disease and pregnancy and from the insipidated bile precipitation occurs forming the nuclei for gall stones. This theory is further carried out by Boyesen's chemical study of gall stones found in 5000 cadavers. The freshly deposited stone and the nuclei of all the older stones consisted of bile pigment and calcium. Cholesterol may be precipitated on these nuclei. Clark (2) says that in his experience the insipidation influence on the bile of malaria and black water fever is open to question as an important etiological factor. Wohl (167) considers that stasis of the bile is caused by inflammatory changes in the gall bladder. The bile salts being dissolved by the infection the cholesterol precipitates as it cannot be held in solution without the salts. Aoyama (2) performed a series

of experiments on guinea pigs and rabbits from which he drew these conclusions. If the cystic duct is ligated concretions similar to pure cholesterol stone are occasionally formed. If cholesterol or its fatty acid esters are injected subcutaneously and the cystic duct ligated pure cholesterol stones are precipitated from the bile without the action of bacteria. If cholesterol is given by mouth the same results are produced.

Cholesterol content of the blood. Rehfuess (18) thinks that the most important factor in the formation of gall stones is an increase in the cholesterol content of the serum. This may occur through cholesterol rich foods or through the suprapurals or corpora lutea. Porter says that the principal reason why women who have borne children are prone to gall stones is because during pregnancy there is always an increase in the cholesterol in the blood. We have already spoken of the normal content and will have more to say later.

PATHOLOGY

The most complete classification of pathologic conditions found in the gall bladder is that of Irwin and MacCarty (78). (a) cholecystitis catarrhalis acuta in which the gall bladder is normal as to size and color the only change is that the villi are congested. (b) cholecystitis catarrhalis chronica which varies from group a in degree only there are erosions over the apices of the villi producing the so called strawberry gall bladder. (c) cholecystitis catarrhalis papillomatosa in which a villus is enlarged and there are stones. (d) cholecystitis catarrhalis papillomatosa malignum in this group there is an irregular or perverted hyperplasia. (e) cholecystitis catarrhalis carcinomatosa characterized by knob like out growths and probably but a later stage of group d. (f) cholecystitis chronica in which there is a proliferation of the connective tissue of the villi and submucosa producing ridges of scar tissue. (g) cholecystitis chronica cystica in this group a stone is lodged in the cystic duct and the gall bladder distended. (h) cholecystitis purulenta necrotica which occurs during any stage of inflammation with obstruction of the cystic duct plus infection. Pericholecystitis acuta and chronica are sequels to any of the above types and the adhesions formed may be to the omentum duodenum stomach and the transverse colon.

Wohl (167) divided gall bladder diseases into (a) catarrhal inflammations (b) cholelithiasis (c) empyema and gangrene of the gall bladder (d) complications such as duct obstruction and pancreatitis. His subdivisions are practi-

cally the same as those of Irwin and MacCarty. He mentions in addition the very thick walled gall bladder in which multiple stones are imbedded in the wall. He believes cholelithiasis is an advanced stage of cholecystitis. Sprengle (151) divided gall bladder pathology as regard the virulence of the infection as follows: (a) destructive cholecystitis when the calculus is immovable and the contents virulent. (b) simple cholecystitis where the stone is loose and the contents not virulent. This is the type usually associated with gall stone colic. (c) hydrops where there is a permanent closure of the cystic duct and the contents not virulent. (d) chronic cholecystitis in which there may be empyema where the occlusion is imperfect. (e) the results of any of the preceding groups where the condition is quiescent such as shrinkage scar formation etc. Deaver (3) found first in frequency in the gall bladders which he removed a chronic or interstitial cholecystitis and next acute exacerbations of these conditions. Mayo (99) believes that obstruction and stasis are due to bacterial infarcts in the wall of the gall bladder from the systemic circulation which render it stiff and unable to expand. In his opinion all gall stones are secondary to cholecystitis but the infection may clear up leaving stones behind which may temporarily plug the ducts. He does not believe that infection reaches the gall bladder through the lymphatics or the common or cystic ducts. Stagnation plays an important part in the production of gall stones because in this condition there are within the gall bladder cholesterol bile salts and bacteria the three most important elements in their formation. Cholesterol is always increased in the blood of adults with growing cells whether they be cancerous or embryonic in character.

Porter (124) quoting Rothschild and Gerster shows that in most cases not cured by cholecystostomy the cause of the symptoms is not in the gall bladder itself but in the bile. He therefore believes the gall bladder is rarely the cause of the symptoms of which the patient complains.

Buchanan (15) is convinced that the gall bladder has remarkable powers of recuperation and in the majority of cases will recover its function after cholecystostomy. He thinks that the fate of the drained gall bladder if not totally gangrenous depends upon the perviousness of the cystic duct.

A rare case of hæmatoma within the gall bladder is reported by Hendon (71). The symptoms were those of acute gall bladder infection but when the abdomen was opened the gall bladder

was thick distended and filled with a blood clot. Nickell (110) quotes Smithies who reviewed 6000 cases and made the following observations: There were 434 cases of acute and chronic cholecystitis in none of which gall stones and no malignancy were present. Out of this number 28 were of the acute catarrhal type. Stones were present in 51 per cent and sand in 8 per cent. Bodenshtab (113) in a series of 452 cases found stones in 311 and cholecystitis without stones in 144.

According to Babcock (5) a milky or whitish gall bladder is always diseased. Pericholecystitis may lead to adhesion. There may be enlargement of the tributary lymph nodes. It will be noted in more detail later. Normal bile is of a clear golden yellow color. Turbid purulent bile suggests cholecystitis whereas colorless mucus always indicates obstruction of the cystic duct. The mucous membrane in cholecystitis may prevent any change from a normal appearance to empyema and gangrene.

Delle Valle (37) cites a case in which there were 5 adult ascariades plugging three of the bile ducts in an insane patient who came to necropsy. They were all found in the intestine. There were signs and symptoms of biliary stasis but no gall stones were found.

Clark (2) in his autopsy among laborers in the canal zone records some interesting cases. In a boy of four years the gall bladder was full of a putty like mold of inspissated bile while in another there was a stone in the cystic duct with a pouch like formation at the lower end of the common duct resembling a diverticulum of the duodenum. In still another case the cystic duct was occluded and there were 7 large stones in the gall bladder. This patient had been operated upon within the year for gall stones and both bladder and duct emptied of stone. He died of tuberculosis. This undoubtedly was a case of true recurrence. In 2 of his cases there was evidence of ulceration of the stone from the gall bladder into the duodenum. In another case there were multiple abscesses in the left lobe of the liver with a huge calculus in the common duct several calculi in the cystic and many stones in the liver substance.

According to Lothrop (94) in typhoid cholecystitis the pathology may be that of an acute catarrhal inflammation and ranging from this through all the stages to a more or less extensive necrosis and perforation. There may be multiple ulcers of the mucosa. Perforation usually takes place near the cystic duct. Price (126) quotes Thomas who collected 154 cases of typhoid

fever complicated by cholecystitis. Perforation occurred 39 times. He classifies the pathology of typhoid cholecystitis as follows: (1) acute catarrhal type (b) acute suppurative with or without tons (c) gangrenous cholecystitis. The typhoid bacillus may be alone or associated with other organisms.

Ele (44) has written an excellent paper on the mucous gland of the gall bladder. In the newborn no glands are found in the wall but in the adult two types are frequently met with both usually pathologic. In the first type the glands extend from the surface epithelium into the mucosa; they may be simple or branching tubules. The second type that is described by Lu Chka which consists of a straight tubule with the lower portion either coiled or branched and surrounded by a capsule. These glands may penetrate into the suberosa or serosa and are not present at birth. Three theories have been advanced for their development: (a) the distention theory of Alchoff et al. that they are caused by distention of the gall bladder; (b) the infection theory that they are developed by the irritation of infection; (c) that they are misplaced recta. To these the author adds a fourth theory that of the stimulation of a latent power of growth. The strongest argument in favor of the latter is that true glands cannot form from surface epithelium unless such latent power is present. The gland secretes mucus and it is probable that bacteria enter the gall bladder from the cystic artery through them. They may be the seat of pathologic process either within or around them or when they contain stones they may perforate into the peritoneal cavity. They may also be the site of cysts or adenomas. The most important pathologic role played by these glands is that they may harbor infection and keep up a cholecystitis. In chronic infection of the gland cholecystostomy will not produce a cure and thus according to the author is an argument in favor of cholecystectomy.

It is a well known fact that in cholecystitis the lymphatic gland draining the gall bladder may become enlarged and thus constitute an important diagnostic factor of the condition. These enlarged glands lie along the common hepatic and cystic ducts (97) in acute process they are enlarged and oftentimes in chronic ones are more indurated. One should familiarize himself with these enlarged glands that they be not mistaken for stones and that they may be used as a diagnostic factor at time of operation. In some cases the enlargement may be so great as to produce jaundice or lymphedema of the head of the pancreas (98). The proper method of

palpating the e glands is to place the forefinger through the foramen of Winslow and follow the hepatic common and cystic ducts from above downward in the edge of the gastrohepatic omentum. Cullen (31) reports a case in which there were symptoms of appendicitis associated with icterus. Operation revealed a calcified lymph gland at the junction of the cystic and hepatic ducts. Fowler (51) records a case in which calcified glands near the common duct produced symptoms of stone within it. It was the first of the kind he had observed in several thousand laparotomies. At operation there was a cysticoduodenal ligament extending from the duodenum to the gall bladder and a hard mass was felt in the lower portion of the common duct. This with another smaller gland was removed. Moderate cholecystitis was present. The patient recovered and remained well without the removal of the gall bladder.

Papilloma of the gall bladder. C. H. Mayo (98) states that in 2,940 cholecystectomies performed in their clinic papillomata were found 130 times. They are more frequent in females probably because more gall bladders are removed in women. There was always a swelling of the lymphatic glands along the bile ducts showing that papillomata are due to infection. Out of 168 gall bladders removed at the Mayo Clinic Irwin and MacCarty (78) found one or more papillomata in 85 of the cases. In all of them the mucosa was intact and the papillomata were usually pedunculated and yellow or white in color. C. H. Mayo thinks that papillomata of the gall bladder occur as the result of bacterial invasion of the wall which produces a hyperplasia and possibly later necrosis. The tumors varied in length from two to six times that of the normal villus.

Graham (61) in a study of 30 cases of biliary tract disease found at operation an enlargement of the liver in 87 per cent. Small pieces of liver tissue were removed and studied microscopically and bacteriologically. His conclusions were as follows: (a) In cases of cholecystitis there were microscopic evidences of inflammation (b) it was characterized by leucocytic infiltration of the interlobular sheaths (c) cultures showed the same organisms present in liver and bile (d) in chronic cholecystitis the changes are those of cirrhosis (e) the pathology was pericholangitis (f) the gross enlargement was usually due to oedema (g) under proper surgical treatment the liver usually became normal.

In regard to strictures of the gall bladder Elie (43) from his study of 100 removed post

mortem divides them into two primary types: congenital and acquired. The congenital constituted 11.29 per cent in 62 consecutive post mortem examinations of babies. They were of three types: annular strictures of the duct to folds of the inner layers and the elbow deformity in which the fundus is bent on the body. The acquired form arises from any one of seven causes: (a) destructive lesions of the mucosa (b) intramural infections (c) lesions beginning in the serosa (d) adhesions (e) perforating wounds (f) chronic indurative processes (g) malignant tumors.

Pathology of gall stone formation. Rosenbloom (136) classifies gall stones according to their chemical composition: (a) pure cholesterol stones (b) stratified cholesterol calcium stones (c) cholesterol pigment calcium stones (d) composite stones composed of cholesterol and a mantle of cholesterol and calcium (e) bilirubin calcium stones usually found in the bile passages of the liver (f) very rare calcium carbonate stones. He says the theory of Naunyn that the chief source of cholesterol is from the degenerated and desquamated epithelial cells of the gall bladder and tracts is not accepted by Aschoff and the French observers who believe that the first step in the formation of cholesterol stones is non-inflammatory. They think it is due rather to increased excretion of cholesterol by the liver or excess of cholesterol in the blood or possibly because of the resorption of solvent substances from stagnating bile. These primary cholesterol stones may then produce inflammation and occlusion leading to the formation of common mixed stones. From the cases reported by Rosenbloom he concludes that in all where there is a previous history of infection the gall stones are composed chemically of calcium salts while in those without a history of infection they are composed of cholesterol.

Hubbard (76) says that in all cases of cholelithiasis there is a low grade inflammation of the gall bladder which brings about a desquamation of the epithelial cell and albuminous exudation. There is also an increased formation of mucus and cholesterol with a precipitation of biliary salts thus producing stones. He reports 108 autopsies where gall stones are found in 76 of which they were in the gall bladder only. Ross (139) quotes Runyon as explaining the formation of gall stones in the following manner: Bacterial infection produces inflammation of the mucous membrane and desquamation of the epithelial cells. These contain undissolved cholesterol and calcium salts which react and produce an in-

soluble calcium salt of bilirubin. From this salt and the amorphous cholesterol in the cell the calculus originates and grows by deposition and recrystallization. The number of tones may vary from one to several thousand. Van den Berg (157) thinks that the radial cholesterol stone occurs as the result of stagnation alone and not of infection. He believes that its existence predisposes to infection and when it occurs it may result in hydrops, the formation of mixed cholesterol or other stone. If it exists alone it may not produce symptoms. Hene (12) believes that tones are not dependent upon primary infection of the gall bladder. Bevan (9) says they are the result of a mycotic infection of the mucous membrane of the bile tract. The colon and typhoid bacilli are the most common causes but in some cases they may be of purely chemical formation. Fiedrich (41) quotes Poor Beer and Levinson in the importance of intrabiliary cholelithiasis and think that in 3 of his common duct cases the calculi were probably formed in the liver.

Bacteriology of the gall bladder. Deaver () reports 150 cases from 1914 and in the same tone were found in 10 per cent. Culture taken from the bile and pus showed the bacilli of common mucous most frequently present. Judd (81) quotes him as saying that the content of the gall bladder are sterile in 50 per cent of the cases operated upon for tone.

Toenck (14) obtained culture by special method from the content of the gall bladder the nuclei of the wall of the bladder and adjacent lymph gland in 47 operative cases of cholecystitis. Culture made from the content in 29 showed no bacteria in 15. In the remaining 16 the streptococcus was not found in pure culture but 5 times in a connection with the colon bacilli. Culture from the tones in 33 cases showed no bacteria. In 14 streptococci were found in pure culture. Culture from the wall of the gall bladder were made in 2 cases and the streptococcus was found in pure culture in 1. Among the 1 case in which the content of the gall bladder were sterile the streptococcus was isolated from the wall of the gall bladder in 8 and from the center of the stone in 6. The lymph gland were cultured in 8 cases and in 4 a pure culture of streptococcus was found.

Norlent (11) reports a patient who had recovered from paratyphoid infection. Several weeks after the attack she developed symptoms of cholecystitis and at operation a distended gall bladder was found full of pus. He quotes Kehr as saying that when the gall bladder is removed

for typhoid infection the drainage should be kept up until the bacilli disappeared from the bile. Porter (124) quotes from Rovsin clinics 320 cholecystectomies in 54 per cent of which the bile was sterile. Boysen says that with small primary bile pigment calcium stones the gall bladder is always healthy. Feldman (48) states that in all cases where death occurs during the course of typhoid fever typhoid bacilli are found in the gall bladder. On examination of the gall bladder removed in 28 cases of cholelithiasis the contents were purulent in 16 and in 5 the typhoid bacillus was cultured from the pus.

Cottam (28) reports a case of acute gangrenous cholecystitis in which the bacillus aerogenes capsulatus was present in conjunction with the taphylococcus. He says that complete gangrene of the gall bladder is very uncommon and that so far as he knows this is the first case where the gas-producing organism has been found in gall bladder infection. He accounts for its presence by the fact that the bacillus is a normal habitant of the intestinal tract. [Might this not have been an accidental contamination?—Kevier.]

Nichol (100) gives the result of his experiments on 97 animals in which 40 gall bladder lesions were observed. His experiments showed that the organ is the most persistent source from which the bacilli can be recovered after injection. Grieg (65) experimented with rabbits injecting them intravenously with cholera like vibrio. The result left no doubt in his mind that the lesion of the gall bladder caused formed centers around which calculi were deposited.

In 3 cases reported by Hubbard and Kimpston (11) pus was present in the gall bladder in 28 and among these the organ was both contracted and distended. Following Courvoisier's law a contracted gall bladder is more common than a distended one in connection with tone in the common duct.

Bilious attacks. Buchanan (6) has reviewed the literature on the few previously reported cases of this rare condition. He says that in some massive bile effusion has been found in the abdomen at autopsy where no evident lesion in the gall bladder or tracts could be discovered. He quotes M. H. Richardson who reported a case in which the right upper quadrant was flooded with bile and in which no perforation of the bladder or tracts could be demonstrated. He also quotes Clairmont and von Haberer as recording a case where they evacuated 1 or 8 liters of fluid resembling bile from the abdomen.

In this case no perforation was discovered but there was a large stone in the common duct. The two authors just quoted ligated the common duct in four dogs all of which died with intraperitoneal bile effusion but without perforation of the ducts. These experiments would seem to demonstrate the permeability of some part of the bile tract which being in a pathologic state permitted the transudation of bile by a process of filtration. The case reported by Buchanan was in a boy twelve years old who at the age of two and one half years had typhoid fever. In his eighth year he began having attacks of pain in the right upper quadrant with vomiting of bile. Ten days before operation he was injured in the abdomen and eight days later he had cramps with nausea, vomiting and temperature. The trouble was located in the gall bladder. At operation the peritoneal cavity contained a mixture of bile and sero pus. The peritoneum of the gastro-hepatic omentum was oedematous and green and the wall of the common duct black. The gall bladder was tense red and full of bile mucus and pus. There was no obstruction in the ducts. The hepatic duct was drained and the patient made an uneventful recovery.

The reaction of the peritoneum to bile depends on whether the latter is infected or not. The author has collected 16 cases of bile peritonitis in 81 per cent there was some pathological condition of the gall bladder or ducts. The author gives the following as possible channels of escape of the effusion into the peritoneal cavity: (a) filtration through the walls of the gall bladder or ducts rendered abnormal by disease or injury; (b) microscopic perforation improbable in the majority of cases; (c) small perforations hardly visible to the naked eye as in a case reported by Sick and Frankel; (d) rupture of the wall subsequently healed; (e) rupture of the intrahepatic bile canals as in the cases of Nonwerck and Karlsson; (f) postperitoneal rupture of common or hepatic duct by trauma or ulceration followed by subsequent rupture into the peritoneum. He concludes that his case belongs to the last group. He thinks the treatment of the condition should consist of mopping out the peritoneal cavity and drainage of the common duct.

Diseases of the common and hepatic ducts
W. J. Mayo (102) states that injuries to the common and hepatic ducts are usually due to operative accidents and in only a small number of cases are obstructions caused by ulcerations from gall stones. Benign tumors of the stump of the cystic duct may occur after cholecystectomy and cause obstruction to the common duct. Erdmann and

Heyd (47) say that in obstructive condition at the ampule of Vater it is usual to find the gall bladder distended with bile or it and the common duct filled with a clear mucoid fluid due to pressure acholia or the immediate absorption of bile into the blood and lymphatic vessels. The most frequent obstruction is from cancer of the pancreas ampulla or duodenum.

Idiopathic cysts of the common duct are rare and have never been diagnosed before operation. Waller (160) reports from the literature 34 such cases all of which excepting 5 were operated upon. They are always found in young people. In his series there were 14 girls and 5 boys. Only 5 of the 34 recovered. They were treated by making a communication between the cyst and the intestine or a side to side anastomosis between the duct and the duodenum. Fowler (52) quotes Kehr as reporting in 1915 the total number of idiopathic choledochus cysts to be 19. The most marked enlargement was in the middle and upper portion of the common duct which possibly was accounted for by an angulation of the duct at its entrance into the duodenum. Most of these cases die in childhood from cholangitis. The author reports a case of a man twenty two years old with symptoms of acute cholecystitis and cholangitis. At operation the common duct was as large as an orange and the common and cystic ducts dilated. Wieland and Quesada (164) report a case of enormous dilatation of the biliary passages forming a cavity the size of a child's head due to a constriction in the retro-pancreatic portion of the common duct. The pancreatic duct was slightly dilated. Before operation a large tumor was palpable in the right hypochondriac region.

Congenital obliteration of the bile ducts is also an extremely rare condition. Holmes (74) reports the case of a baby fifteen weeks old in whom there was congenital obliteration of the common duct with part of the gall bladder. In this case 3 hepatic ducts opened into a small cavity corresponding to the upper part of the common duct. The pancreatic duct opened at the papilla normally. He thinks congenital atresia is due to faulty development from the primary tissues. When the lumen is abnormally small or where traction or pressure tend to obliterate it the walls may adhere and the patency be lost. After birth infection may occur from the intestine and lead to obliteration. The author is inclined to believe that congenital obliteration is not so rare as generally supposed.

In the experience of Judd (81) and others dilatation of the common duct has been ob-

served in hydrop of the gall bladder where a stone had plugged the cystic duct for a long time Mitchell and Stifel (10,) recorded the experiments of Herring and Simpson on experimental obstruction of the common bile duct in animals. Each individual observation extended over a few hours only and howed after ligation a mean pressure within the duct of 300 mm of bile. As regards the effects of nerve stimulation the observer found that when the vagus was stimulated there was a prompt fall in pressure. In their own experimental observation were made from two to five days after ligation of the common duct. The mean bile pressure in cats was 278 mm. They were unable to obtain any uniform variation in pressure by stimulation of the nerve. The practical point is: Why do the obstructed bile passages rupture after an interval of several days? They think it is not because of continued retrograde rise of fluid pressure but rather on account of the inflammation which may occur even after a septal operation. The rupture may occur close to the nature proximal to it or even in the gall bladder itself. Their experiment shows that the pressure is higher in chronic than in acute obstruction though in the latter it rises sharply during the first 3 hours after ligation and remains fairly constant thereafter. The constant pressure is the result of the fact that even in the hepatic epithelium and abscesses the bile pressure is constant.

Ac orlin (11) Lun (195) is one in the cystic duct and an omentum gall bladder neck may produce sufficient pressure in the common duct to cause jaundice. Eberth and Dunlavy (14) in his study of the fate of the cystic duct after cholecystectomy report the case of a patient who had previously had the gall bladder removed. They performed a secondary operation for recurrence of symptoms and found a dilatation of the cystic duct distal to the gall bladder. A similar case was operated upon and reported by Floercken.

A few words more in regard to the cholesterol content. Leemann and Maroun (15) in discussing the cholesterol content of the blood in gall stone liver state that a hypercholesterinemia is found in a number of conditions besides gall stone. The most important are nephritis, arteriosclerosis, syphilis and diabetes. The author made cholesterol determination on 60 patients operated upon in Deaver's clinic. They averaged 200 mg. per 100 ccm. of blood as the upper limit of normal. Hypercholesterinemia has been found in obstructive jaundice but there was no relationhip between the degree of

jaundice and the amount of cholesterol. It has also been observed in malignant tumors. Anemia produces a low cholesterol content. In 37 women 16 with stones the average was 225 mg. of cholesterol and 21 without stones 206 mg. In 23 male 6 with stones averaged 200 mg. and 17 without stones 193 mg. This subject will again be referred to under diagnosis.

McNeil (105) made a study of the bile obtained from the duodenum by means of the duodenal tube passed into an empty stomach. 4 of the cases were cholecystitis, 3 of them acute. In 1 of the acute cases bile stained pus cells were found and there were also round or oval deeply bile stained cells larger than a leucocyte and containing a round and often eccentric nucleus. The latter were highly refractile. In 1 case taphylococci were found and in another motile bacilli. In 1 of the cases non bile stained polymorphonuclear cells were present and in still another chronic cholecystitis with occlusion of the cystic duct the findings were negative.

SYMPTOMATOLOGY

Babcock's (5) classification of the symptomatology of chronic cholecystitis is the most logical met with in the literature and it will be given first place. He divides the condition into three stages regarding symptom. (a) The stage of cholecystic indigestion and toxemia which may continue from fifteen to twenty years. In this stage the operative mortality should be under 1 per cent. (b) The stage characterized by the movement of calculi with recurrent attacks of acute inflammation. The movements of calculi often follow indigestion in diet frequently occur at night and last but a few hours. When no calculi are present the attacks are less violent and may last for several days. The second stage is usually observed between thirty five and fifty years of age. (c) The third stage is characterized by acute and dangerous complications such as empyema and gangrene of the gall bladder, obstruction of the common duct, acute pancreatitis, carcinoma and intestinal obstruction from stone. The complication usually occur between forty five and seventy five years of age. Babcock thinks the diagnosis should be made in the first stage to avoid later trouble though at the time while the patient presents a crisis of infection there is little or nothing to be found on physical examination. The symptom of this important first stage may be grouped as follows: (a) digestive symptoms such as fullness and distention after eating, bitter eructations, belching, more rarely vomiting and constipation.

crasy toward certain foods and relief by fasting or taking of alkalis. In gall bladder infections there may be so called intestinal indigestions also acute or subacute arthritis cephalalgia neuritis and various neuroses. Occasionally fever without other symptoms may result from cholecystitis.

Hubbard and Kimpton (77) in a study of 6 cases found that every pain was nearly always present at some time during the course of gall stones such a history was given in 212. Next in importance was vomiting which was present in 137 and was mild or severe and persistent. Jaundice in varying degree was present at some time in 107. Of the jaundiced cases in 70 stones were in the gall bladder only in 5 they were in the common duct only or in association with stones in some other part of the bile tract in 9 they were in the cystic duct alone or in association with calculi in some other part while in 3 they were not accurately located. Chills occurred 9 times. An abdominal mass was present in 40 cases and was indefinitely located in 6 more.

Robinson (134) says that in people past middle life there are two symptoms which point particularly to gall stones (a) nausea and vomiting after a meal of rich fatty food (b) the occurrence of an attack of diarrhoea during or immediately after a hearty meal. With both of these there is often chilliness and faintness.

C. H. Mayo (98) in discussing cholecystitis without stones points out the important fact that reflex gastric symptoms may be prominent. Even attacks of colic may occur though they are not so severe as with stones. Tenderness over the gall bladder in these attacks may last for several days. He also lays stress in these cases upon a qualitative food dyspepsia particularly when fats or foods which produce gas are eaten. Gastric stasis may be a marked reflex symptom. The pain may be referred to the left costal arch or the epigastrium. Blocking of the cystic duct with infection causes but little increase in temperature while infection of the common and hepatic ducts is associated with a high temperature. This is because the fundus contains few lymphatics while the ducts are rich in them. When obstruction of the common duct persists there is usually jaundice. Where there is persistent infection in the gall bladder constipation is the rule while in those cases associated with pancreatitis attacks of diarrhoea are often noted.

Tilton (154) says the symptoms are characteristic when stones are associated with inflammation of the gall bladder but when there

are no stones or they remain quiescent this is not so. In these cases they are usually referred to the stomach according to some authorities in as many as 70 per cent. There is then epigastric distress loss of appetite nausea and vomiting the latter often giving relief. Careful histories and examinations have shown that not more than 25 per cent of the cases operated upon for gall stones had typical colic at any time. Jaundice is rare when the stones are confined to the gall bladder and is not always present when stones are in the common duct. Ross (139) says that gall stone colic is caused by the passage or attempted passage of stones through the ducts and is more apt to occur when they are small because the cystic duct has a diameter of only one eighth of an inch the hepatic one sixth of an inch and the common duct which gradually narrows from above downward of five sixteenths to three sixteenths of an inch. In his experience stones may remain in the gall bladder without symptoms unless fresh infection occurs.

Deaver (32) gives as the most consistent symptoms of gall bladder disease (a) long continued indigestion and flatulency (b) recurring attacks of pain in the epigastrium and right upper quadrant. In pancreatic cases the pain is primarily in the epigastrium. He quotes Reidel on the causes of this colic like pain (1) adhesions about the gall bladder without stone (2) adhesions about the gall bladder with stones and the cystic duct patent (3) inflamed distended gall bladder with occluded cystic duct (4) inflammation of the common duct (5) transit of stones through the extrahepatic ducts. The pain is usually referred to the right shoulder and right costal border but occasionally to the left hypochondrium or back in which case there are usually adhesions to the stomach or duodenum (c) Tenderness and rigidity in the right hypochondrium (d) vomiting after meals (e) jaundice present in 41 per cent of simple gall bladder disease 55 per cent of the common duct cases and 38 per cent where there is pancreatic involvement. Where there is no mechanical obstruction the cause of jaundice is infection either in the extrahepatic ducts or higher up. Deaver places no reliance upon coagulation time because the methods in use are too inaccurate neither does he derive any benefit in diagnosis from an examination of the intestinal contents or test meals.

Andries (1) quotes Moynihan in regard to the inaugural symptoms of gall stones. They are referred to the stomach and are as follows (1) feeling of fullness weight distention or oppression in the epigastrium one half to three fourth of

an hour after meal relieved by belching and is finally dismissed by vomiting. The symptom depends upon the quality and not the quantity of food qualitative dyspepsia. In some cases this sense of epigastric tightness may develop into intense pain if not relieved and the patient may be unable to wear tight clothing during the attacks or may experience a catch in the breath. There may be faintness and nausea and for several days afterward the body may feel stiff. Andries brings out a very important point which is not often mentioned during an attack there may be no elevation of temperature but the leucocyte count often ranges from 15,000 to 25,000 showing the presence of a mild infection. Without the leucocyte count it would be impossible to detect the infection. W. J. Mayo (101) says that in simple gall stone colic the pain is always referred to the epigastrium and when it passes into the region of the gall bladder it is an indication of change in the wall of that organ. From that time on the patient does not have complete relief between colics.

Graham (60) states that in gall stone disease the symptoms come on in acute attacks of short duration followed by intermission of hours, weeks, months or years during which the patient enjoys normal health. Quite characteristic as the suddenness of onset is the abrupt cessation.

C. H. Mayo (100) again commenting on qualitative food dyspepsia in cholecystitis says that epigastric distress is caused by taking certain food which develop gas such as raw apples, oil and fried foods. The stasis in the duodenum thus produced presses on the duct and if there is cholecystitis the gall bladder cannot expand without producing pain. If the cholecystitis subsides and leave stone the patient may suffer from colic due to plugging of the cystic duct. He says that one fourth of diseased gall bladder do not contain stones but that every colic is possible from plugs of mucus and thick bile obstructing the duct.

Gil (58) conclusions in regard to icterus in surgical disease of the bile passages are (a) Stones in the gall bladder or cystic duct do not produce jaundice (b) colic accompanied or followed by icterus which completely disappears and does not return with another attack means the passage of a stone (c) varying degrees of icterus more intense during colic usually means common duct stone (d) persistent icterus becoming more intense with colic means retained stone in the common duct (e) persistent jaundice without a history of colic means com-

pression of the common duct by a tumor in the head of the pancreas.

As regards the gall bladder conclusions are as follows (a) When the cystic duct is obstructed the organ distends, bile is absorbed the bladder becomes filled with mucus and there is no jaundice (b) if there is severe infection the contents become purulent and there is pain and temperature (c) in partial or complete obstruction of the common duct if the gall bladder is healthy and the cystic duct open the gall bladder distends and the liver enlarges. In the majority of cases however the gall bladder having been the site of chronic inflammation is smaller than normal (d) when there are symptoms of common duct obstruction the gall bladder is contracted in 80 per cent of the case. Roman (135) bases his observations on 2,000 operations on the liver, gall bladder, bile passage and pancreas. He says when the gall bladder becomes entirely filled with stones in putrid bile or mucus the patient may never have biliary colic because only movable stones produce colic. Sprengle (131) thinks that gall stone colic is due to sudden or lasting occlusion of the cystic duct with retention of the bladder contents. Bevan (9) believes that the intracystic tension due to mucous membrane swelling and excessive mucus secretion is the cause of pain rather than peristaltic action. Babcock (5) says there are no essential nerves in the gall bladder except at the neck and therefore pain is present only when pressure or traction is exerted on the ducts or sensitive tissues about.

Bodenstab (13) says that tenderness in the gall bladder region was the most common symptom present in his cases. The others in their order of frequency were vomiting, belching of fluid or gas, dyspnoea during attack, radiating pain, reflex digestive disturbances and jaundice. Rhode (131) in 133 patients found a history of jaundice or jaundice at examination in 48.5 per cent.

A symptom not often mentioned but of great interest in the differential diagnosis of gall bladder lesion is hæmorrhage from the stomach where no gastric pyloric or duodenal ulcer is present. Turner (156) reports such a case in a woman of twenty-eight who had been operated upon for gall stone. The symptom recurred and she had numerous attacks of gall stone colic with vomiting of considerable quantities of bright red blood. A second operation was done and 6 small stones removed. She did not vomit blood after the second operation. Todd (155) mentions a case of stone in the common duct one of the symptoms of which was repeated hæmorrhage from the stomach.

Dennis (38) found in acute empyema of the gall bladder that colic without jaundice but with temperature and tenderness were the important symptoms. Pius (118) in discussing acute cholecystitis says that pain was a prominent symptom in all of his cases it was of all degrees from a sense of oppression to a severe colic. He quotes Rossing as reporting a case in which the only symptom of cholecystitis was severe pain in the right shoulder. The pain may resemble angina pectoris. One of his patients had pain in the left side and left shoulder with great sensitiveness over the gall bladder. In his acute cases there was vomiting in 31 per cent and slight jaundice in 43 per cent but the most characteristic sign was tenderness under the right costal arch.

According to Lothrop (94) the symptoms of cholecystitis during typhoid fever may be masked by the condition of the patient many mild cases being overlooked. If an attack comes on during the period of convalescence there are the usual symptoms pain in the gall bladder tenderness nausea and vomiting and often a distended gall bladder. In addition there may be chills and sudden rise in temperature and leucocytosis. The symptoms may subside or the process go on to necrosis and perforation which is indicated by sudden pain collapse and peritonitis. Price (126) in discussing cholecystitis complicating typhoid says that the most prominent symptoms are acute agonizing pain in the right upper quadrant with nausea vomiting rapid pulse rise in temperature and distention of the abdomen. When perforation is imminent or has occurred the symptoms are those of peritonitis. He thinks that percussion of the abdomen is more valuable in eliciting tenderness over the gall bladder than is palpation.

Horn (75) reports a case of situs viscerum in versus with gall stones in which the patient had pain for nearly forty years in the left hypochondriac region. One year before operation she sustained a jarring injury after which the pain was worse. She also complained of tenderness beneath the left costal arch. He operated through the left rectus muscle and removed 4 gall stones. Horn records 9 similar cases from the literature. Pius (118) also reports a case of transposition of the viscera with a tender gall bladder on the left side.

Eisendrath (41) has written on unusual symptoms of stone in the common or hepatic duct. They may exist in these situations without giving rise to the symptoms which have always been considered pathognomonic. In 8 cases in which

he operated the symptoms were (a) pain similar to gall stone colic (b) icterus slight or occurring only during attacks of pain in 4 cases there was no icterus at any time (c) chills and fever. The common duct varied in size from the little finger to the thumb.

As regards the analysis of the gastric contents in cases of gall stone disease Lichty and Zurhorst (92) record their findings in 81 operated cases 73 per cent had hyperchlorhydria. In 36 cases of cholecystitis 70 per cent had the same condition. Ohly (114) found secondary gastric disturbances in cholelithiasis hyperacidity in 18 and deficient secretion in 46. In only 13 of 77 cases were the chemical findings in the stomach normal. In acute cholecystitis hyperacidity was the rule. All cases of colic were accompanied by excessive or deficient secretion. In many cases the stomach and intestinal disturbances persisted for years before there was gall stone colic.

Association with other diseases. Peterson (119) found gall stones in 135 out of 1066 laparotomies for pelvic disease. Kelly found them in 14.5 per cent and in the Mayo Clinic they were present in 17.1 per cent of uterine myomata. The reasons for this large percentage of gall stones in pelvic diseases are (a) the high average age (b) the high percentage of patients who have borne children (c) the proportion of uterine and ovarian neoplasms present. He advocates a routine examination for gall stones unless there is some contra indication. When stones are removed from 85 to 90 per cent of the patients will have no further trouble otherwise 30 per cent will suffer from further gall bladder symptoms. His conclusion is to remove the gall stones at the first operation when it can be done with safety.

Francini (54) reports a case of ptosis of the liver as part of a general enteroptosis complicating gall stones. In his operation he first anchored the liver and then performed a cholecystostomy. The gall bladder thus furnished an additional support to hold the liver in place.

Lichty and Zurhorst (9) in their analysis of 614 cases of gall bladder and duct disease found only 6 patients presenting a complicating glycosuria. In their experience the incidence of glycosuria as compared with other associated diseases was only one tenth of one per cent higher.

C. H. Mayo (97) says that as a more thorough exploration of the ducts has been practised pancreatitis has been found with increasing frequency. Deaver (32) in his analysis for 1914 found the appendix involved so that it had to be removed in 80 cases out of 159. According to

Judd (81) ulcer of the duodenum and cholecystitis are very commonly associated

Lichty (91) points out that many functional and organic diseases of the heart are caused by lesions of the appendix and gall bladder Paus (118) quotes Bull as having seen cases in which acute appendicitis and cholecystitis were associated He had a similar case and record other in which there was a simultaneous acute infection in the gall bladder and right kidney

Malignant tumors of the gall bladder Else (43) av that sarcoma and carcinoma are found in the gall bladder both as primary and secondary tumor Primary sarcoma is very rare and the secondary form attacks the gall bladder by extension It is not an infrequent site for melanoma Carcinoma occur more frequently In the Breslau statistics it formed 5 per cent of all cases of carcinoma while in those from Gottin 26 per cent were in the gall bladder The point of origin is most frequently in the fundus Often the whole gall bladder is infiltrated and there may be stone Three types retain the cylindrical form of the cell adenocarcinoma papillary and solid cylindrical cell carcinoma In addition to the cystic type there is a cirrhotic form Metastasis does not occur so early nor grow so rapidly as those from other portions of the gastrointestinal tract and those from the fundus occur at a later period than from the neck Liver involvement occurs usually by direct extension In the Balkan statistics the liver is involved in about 40 per cent of the cases occasionally reached through the portal circulation The tumor may involve the colon through duodenum and portal vein in the former producing obstruction and in the latter a site If the common and hepatic ducts are involved there is icterus and the colon may be perforated Secondary tumor may develop in the peritoneum from detached cells and in the large intestine from the cells passing down with the bile As regards the Balkan statistics showed 60 per cent between sixty and seventy years Procher reports a case in a man 24 years old Carcinoma of the gall bladder is more frequent in women differential placing the frequency from 75 to 100 per cent Gall stones are the most important etiologic factor as they are present in from 60 to 100 per cent of the cases The majority are adenocarcinoma and the mucous glands from which they originate are of two types those which do not extend below the mucosa and Luschka's gland which may extend to the subserosa The other source from which adenocarcinoma may develop is adenoma Aschoff

reports finding fundus adenomata in 3 per cent of all the cases The gall bladder may be involved secondarily by cancer

Judd (81) states that malignant disease of the gall bladder occurs rarely and is always associated with stones Vincent (159) says that primary cancer of the liver usually originates in the gall bladder the hilus of the liver or the bile ducts The growth may be papillary or fungous in character and the symptoms are similar to those of carcinoma of the liver plus gall stones Primary carcinoma of the bile ducts is more frequent in men than in women and one of the first symptoms is jaundice Most of the cases occur in the common duct or at the junction of the cystic and hepatic and are anular in type The jaundice is usually permanent Pain is dull aching but is occasionally colic like There is cachexia and rapid loss of strength Cancer is differentiated from common duct stone by the sudden onset of jaundice in the latter and its subsequent intermittent course The pain in stone is sudden severe sometimes radiating and there is not the rapid cachexia Crohn (10) give the point of origin of cancer of the bile and pancreatic ducts in order of frequency (a) the common duct (b) ampulla of Vater (c) the duct of Wirsung (d) papilla of Vater (e) head of the pancreas (f) neighboring organ He considers the duodenal tube of value in early diagnosis as it will show the advance of bile in tumors of the ducts Lund (9) in 47 cases had in which cancer of the gall bladder developed after removal of the stone

As regards the treatment of malignant tumors of the gall bladder Kehr (86) states that he has seen only 15 cases in 49 operated cases In his review of the literature he found 350 operations with permanent cure in 25 per cent of the cases due to the impossibility of early diagnosis W J Mayo (101) state that stone are present in 85 per cent of his cases In 1911 he said that when carcinoma of the gall bladder is sufficiently advanced to diagnose the condition at time of operation the patients did not survive a year but in a number where the gall bladder was removed and found to be carcinomatous after 3 patients were alive and well from two to 15 years after operation Erdmann and Heyd (47) give the following indications for operation in malignancy (a) mistake in diagnosis is the indication not always malignant and these cases should be given the benefit of the doubt (b) relief of pain and distention (c) severe pruritus (d) prolongation of life in comparative comfort (e) hopeless cases without operation A neoplasm at the

ampulla may obstruct the pancreatic flow as well as the biliary. Cancer of the duodenum represents about 0.4 per cent of all the carcinomata and 70 per cent of this number are carcinomata of the ampulla.

Rupture of the common duct. Lapenta (58) reports a case of perforation of the common duct at its juncture with the cystic due to calculi. The stones were removed and the perforation closed with Czerny-Lembert sutures of fine chromic catgut. Recovery was uneventful. The diagnosis of perforation before operation was based on the comatose condition of the patient, tenderness in the right upper quadrant and no symptoms of gastric or duodenal ulcer.

Perforation of the gall bladder. Beve (11) reports a case of perforation operated upon by C. J. Rowan with recovery in both. One was a boy of eleven years who two months previous sustained an abdominal injury causing pain, fever and vomiting. The day on which perforation occurred he received a second blow in the abdomen followed by unconsciousness. Operation revealed a large amount of bile stained fluid in the abdomen. There was peritonitis and a single perforation in a thickened gall bladder. No stones were found. The abdomen was drained and the patient recovered. The second case was a woman in whom a stone was impacted in the cystic duct. She had an attack of gall stone colic one and one-half years before operation and another five months later. After the first attack a swelling formed in the right flank which opened and discharged bile and a few small calculi. At operation the gall bladder was found to communicate with the fistula. It was removed. Grant (62) reports cases of rupture of the gall bladder in one of which there was gangrene of a portion of the wall, the other patient refusing operation died of peritonitis due to the perforation. In both cases there were stones.

Complications. In addition to the above which may be considered as complications there are other conditions which come more strictly under this heading. Hall (60) reports a case of intestinal obstruction and volvulus due to a large gall stone. When by ulceration a stone passes into the intestine the patient is always in great danger even though he may survive. When intestinal obstruction occurs it may be so many years after the acute attack that the real cause is not recognized until operation or necropsy. Jones (80) quotes Schmitzler of Vienna as having reported in his own experience 13 cases of intestinal obstruction due to gall stones. Wagner collected 334 cases from the literature and of

these 191 were women and 71 men. The average age was forty years. In 40 per cent the point of obstruction was in the lower ileum because the small intestine gradually diminishes in size to the ileocecal valve. Jones records 3 cases of obstruction due to gall stones. Parks (115) reports the case of a woman operated upon for acute intestinal obstruction due to a gall stone weighing over an ounce. She gave a history of slight abdominal pain at intervals during the preceding ten years. The stone had evidently ulcerated from the gall bladder into the intestine. Aspinall (4) reports the case of a woman with symptoms of intestinal obstruction who had attacks of gall stone colic for nine years. At operation a large gall stone obstructed the lower ileum. At the site of the stone there was a marked ring of contraction caused by irritation which with the stone was responsible for the obstruction.

Clark (22) reports 2 postmortem cases where stones had ulcerated into the duodenum. Tilton (154) gives the following acute and chronic complications of gall bladder disease: Acute (a) acute cholecystitis sometime with perforation (b) acute obstruction of the common duct by stone with cholangitis and jaundice (c) acute hemorrhagic pancreatitis (d) acute intestinal obstruction. Chronic (a) carcinoma (b) chronic or intermittent obstruction of the common duct with cholangitis (c) chronic pancreatitis (d) adhesions between the gall bladder and adjacent organs causing severe functional disturbances of the stomach and intestine. Investigation of the recorded cases shows that about 95 per cent of the malignant changes in the gall bladder are due to chronic irritation by stone.

Esendrath (41) says that infection of the pancreas may occur secondary to that of the gall bladder through the close relationship of the lymphatics. Pancreatitis of the indurative form results in compression of the common duct. In Deaver's series of 42 recurrences among 1041 operations pancreatitis was the cause of the symptoms in about 10 per cent. Judd (81) quotes Archibald as saying that all cases of pancreatitis are due to irritation from bile entering the pancreatic ducts and producing chemical rather than bacterial changes.

Hubbard (76) records 108 autopsies where gall stones were found. In 16 the stones were in the gall bladder only and of these 9 died. The causes of death being hepatitis, cancer of the gall bladder, pancreatitis and abscess of the liver. In 3 the stones had passed into the ducts and caused death in 43 per cent.

Pru (118) record a case in which a mild cholangitis was associated with necrosis of the pancreas. He also reports 5 fatal cases due to diabetes pneumonia and gangrene of the gall bladder. Phlebitis and pulmonary complications developed in 10 per cent.

W. J. Mayo (101) reports among 4,000 operations on the biliary passages complication in more than two thirds of the cases, stones in the common duct in 402 and serious complications involving the liver, transverse colon and duodenum were the rule.

Pruchet (117) says that three conditions should be kept in mind when operating upon the gall bladder: simple cholecystitis without stones, pancreatitis and icterus. Hoerhammer (73) says that in rare cases the gall bladder may perforate extraperitoneally, either adhering to the anterior abdominal wall perforating and producing an abscess which ruptures externally, or by adhering to the peritoneum posteriorly it may eventually rupture externally. These may in time cease to communicate with the gall bladder and the communication be closed before the abscess opens.

Peidel (129) states that subphrenic accumulations from the gall bladder may occur: (a) from liver abscess due to purulent cholangitis; (b) from suppurations around stones in the bile passage; (c) from rupture of the gall bladder into the liver and thence into the subphrenic space; (d) by perforation of the gall bladder into adhesions outside it; (e) from rupture of the gall bladder, the pus passing to the subphrenic space.

Belauter (8) reports the case of a woman who had an hydatid cyst of the liver during pregnancy. She was operated upon and a number of years later developed a biliary fistula with icterus and great emaciation. Secondary operation showed a complete obstruction of the common duct by stone in the ampule of Vater. She recovered completely.

Lewisohn (90) reports a case of intrahepatic cholelithiasis. At operation the gall bladder contained stone and there were several uncalculated intrahepatic calculi. One of these had become infected and the abscess perforated into the free peritoneal cavity.

C. H. Mayo (98) says chronic infections in the gall bladder are often the source of headaches and myocardial degeneration. Deaver (32) quotes Babcock as saying that myocarditis is the direct result of upper abdominal infections. Infection sometime extends from the common to the hepatic duct and into the liver thus producing

enlargement of the latter and marked toxic symptoms. He thinks that operation in these cases is associated with a very high immediate mortality.

Judd (83) calls attention to the fact that long standing jaundice greatly adds to the risk of operation by causing hemorrhage from the wound or mucous surface within eight or ten days after operation. The coagulation time may be from twelve to fifteen minutes. He considers that transfusion of the patients before operation may be of great value and where the oozing has begun he advises aspiration or incision of the liver substance.

Sadler (142) discusses extensive drainage complications, the surgery of the common bile duct in common duct infections with involvement of the pancreas and in incomplete obstruction from stone. He believes this is largely due to back pressure. In partial obstruction there may occur a dilatation of the smaller bile ducts of the liver and when this is suddenly removed a venous engorgement of the latter takes place with resulting transudation. This with the back flow of pancreatic fluid might account for the excessive drainage.

Recurrence of symptoms. Deaver (34) says that since 1910 1,189 cases were operated upon, 51 of these had had previous operations on the biliary passages so that 4.2 per cent of the work represented previous failures to cure. Sixty per cent had recurrence and were operated upon the second time one year after the first operation, 30 per cent were operated upon within three years. The other 10 per cent were distributed in the period from four to seventeen years after the first operation. In 65 per cent of recurrences after cholecystectomy the cause was failure to remove the gall bladder. In 14 cases stones were present in the gall bladder and cystic duct, in 2 there was a stricture of the duct, in 6 infection had recurred in the gall bladder and in 4 pancreatitis was present. Adhesions were the cause of recurrence of symptoms in 4 and the remainder were due to overlooked stone in the common or hepatic ducts. In case of recurrence after cholecystectomy the group due to persistent infection was much diminished. In one case a duodenal fistula developed after operation and the remainder 6 were equally divided between stricture of the common duct and stone in the common or hepatic ducts. As regard end results he believes infective conditions of the biliary tract are better treated by cholecystectomy.

Eisendrath (41) divides recurrences into (a) true and (b) false. Under true he places

(1) those early cases which followed the placing of silk sutures in the gall bladder () those in which stones developed in the glands of Luschka (3) those in which calculi formed in the intra-hepatic and the common ducts He concludes that true reformation of calculi may take place in the gall bladder Under false he includes symptoms produced by (1) overlooked calculi () adhesions (3) chronic pancreatitis (4) persistence or recurrence of the original infection (5) strictures (6) fistule (7) faulty technique as suturing the gall bladder to the abdominal wall and insufficient removal of the cystic duct in cholecystectomy (8) incorrect diagnosis as in tabes etc (9) the co-existence of two conditions such as ureteral calculus with gall stones (10) contraction at the impulse (11) cancer in the head of the pancreas He quotes Dever's (34) recurrences in 1041 operations 10 per cent being due to chronic pancreatitis He himself reports 13 operations for recurrence of symptoms from causes mentioned above

Stanton (152) also classifies recurrences as true and false Under the former he considers the rare cases of true recurrence and under the latter the clinical recurrences due to stones overlooked at the first operation Kehr reports having overlooked stones in 5 per cent of 103 cases Stanton believes that stones are overlooked at the first operation in from 2 to 19 per cent of the cases He quotes Richardson as having never seen a case of true recurrence in all of his experience In 1911 Kehr in 1780 gall stone operations had 3 cases of true recurrence one of them after cholecystectomy but after cholecystectomy and hepatic drainage he never saw a case In 45 gall stone cases operated upon he found only 3 with a history suspicious of reformation and none of these were operated upon If no foreign body is left in the gall bladder or ducts after operation recurrence of stones is rarely observed He states that cholecystectomy affords no greater immunity against reformation than cholecystostomy

Lund (95) in 347 operations on the gall bladder and ducts observed 3 cases of true recurrence Vaughan (158) reports 3 cases of undoubted recurrence and believes reformation is more common than is generally supposed Kadian (85) reports a case of gall stones with cholecystectomy Six years later there was a return of symptoms The second operation showed the cystic duct had dilated and contained several cholesterol stones He found 8 cases in the literature similar to his own and thinks in his case a small calculus was left in the duct causing

recurrence He advocates ligating the cystic duct flush with the common in cholecystectomy Dever (33) says that stones left at the primary operation are the most important factor in recurrence According to Kehr in long standing cases the ducts become dilated and stones may lodge in pockets which cannot be detected Clark () reports a case in which at postmortem 7 large stones were found in the gall bladder The patient had been operated upon during the preceding year and bladder and ducts emptied of stones He died of tuberculosis This was a true recurrence Foss (50) discussing Matheny's paper cited a case in which he performed cholecystectomy The gall bladder had been drained three times previously and at the time of removal contained 500 small stones This also was a true recurrence

DIAGNOSIS

Babcock (5) believes that transient nocturnal attacks of indigestion in obese and middle aged women are usually due to gall stones With this history very violent attacks suggest empyema or gangrene of the gall bladder and these with shock distention and tenderness mean pancreatitis In gastric or duodenal ulcer the symptoms usually last much longer In acute cholecystitis the symptoms persist several days are less severe and between paroxysms weeks or months may elapse during which time there is usually dyspepsia In ulcer there is food relief while in cholecystitis and stone food increases and vomiting relieves the pain C H Mayo (98) states that in strawberry gall bladder the symptoms are often like those of duodenal ulcer—recurring attacks of from one to three weeks duration with prolonged intervals of improvement The pain in these cases may be relieved by soda as in ulcer He believes the recurrence of attacks means the focus of infection is still active

Nickell (110) says that the most difficult cases to diagnose are those in which the gall bladder stomach and intestine are bound together by adhesions In these there may be symptoms referable to all three organs Bodenstab (13) says that the diagnosis of gall bladder disease rests almost entirely with the history and in 90 per cent of all cases a correct diagnosis can be made from that alone

Lothrop (94) mentions under differential diagnosis of typhoid cholecystitis (1) intestinal perforation (b) right sided pulmonary lesions (c) perforation of gastric or duodenal ulcers (d) appendicitis and (e) acute pancreatitis Ran-sohoff (17) says in the great majority of cases of

gangrene of the gall bladder the diagnosis is made

Bevan (10) considers a carefully obtained history of greatest importance in diagnosis. He excludes other conditions by elimination. He also takes into consideration the physical examination, the laboratory test, and the X-ray findings, which are of little value for reasons before stated. He also lays great stress upon the theories of probabilities in making a diagnosis of lesions of the upper right quadrant. Courvoisier's law is of great value in jaundiced common duct stones, the gall bladder being contracted in 80 per cent while in jaundice from carcinoma of the pancreas it is dilated in 80 per cent.

Einhorn (39) reports his results with the duodenal tube in the diagnosis and treatment of gall stone disease. He examined the bile directly and diagnosed probable cholecystitis by this means in conjunction with the usual symptoms. In 40 cases 13 were operated upon. Of the 28 had gall stones, 15 showed clear bile and the other 7 a turbid duodenal fluid. 5 showed turbid fluid in extrabiliary tract lesion. He says when turbid bile is found in the fasting condition, cholecystitis with stones is usually present. The importance of his findings shows that the method must have little value in the diagnosis of gall bladder disease. Ichfu (128) uses a tube device by himself for obtaining the duodenal contents. He claims that bile is always found in the case of stone, no matter how deep the jaundice, whereas in obstructive tumor it is absent. He says the feces are acholic in duct obstruction with great increase in neutral fats.

Cholesterol estimation. Pehfuss (18) in 80 cases 36 of which proved to be cholelithiasis, found an increase of cholesterol in the serum over the normal of 0.0016 to 0.0018 per cent. There is also an increase in nephritis, syphilis, diabetes, typhoid, tuberculosis, cancer, and the acute infectious diseases. According to Laimann and Magoun (130) a high cholesterol content has not helped in the diagnosis of gall stones because many other upper abdominal lesions give higher readings. Henes (7) reports in detail 38 cases to show that in the great majority of cases of cholelithiasis there is a hypercholesterinemia. He thinks a cholesterol estimate is more valuable than the X-rays. In only 3 cases in a series of 128 did the cholesterol estimate not foretell the condition found at operation.

Radiology. In 1913 Case (26) was able to detect gall stones in 50 out of 1000 cases examined by the X-rays and during the same

year Cole found 6 out of 409. Pfahler estimated that he could detect gall stones in 74 per cent. At the time their article was written Cole and George claimed they could diagnose gall stones roentgenologically in all cases. Their technique was not radically different from that employed in soft tissue detail but required great attention to minute points. They advocate the use of the Coolidge tube and an extremely small cone showing only a limited area on each plate. If the plates are negative the small bladder, stomach, duodenum, and colon should be examined for a lesion. For detecting calculi the matching of shadows together by superimposing one plate over another is the most valuable. Roentgenographically gall stones are divided into two groups: those that contain considerable calcium which can easily be shown, and stones which contain none or only a trace of calcium. When the calcium coating is thin, which is the case in about 50 per cent, the stones are difficult to detect, while with increased density of the coating the ring-like appearance is more marked and easily to be covered. In persons under twenty-five the coating usually is not dense and the stones so soft that it does not show even a dim peripheral ring. Cole (6) states that the safe and sane way to diagnose gall stones when they are composed of calcium or have a definite calcareous coating or nucleus is by submerging gall stones in bile and making a radiograph of them. He found that with no calcium gave a negative shadow, less than the shadow of the bile. By submerging a gall bladder full of bile and stones under water, which has about the same density as human flesh, he found the calculi gave negative shadows, but each was surrounded by a ring produced by the bile, which was of greater density than the stone. The most difficult stones to detect were those which had a nucleus of calcium surrounded by a cholesterin coating. In his experiments he used a stone which contained just enough calcium to show in the living subject, and this was the basis for his comparison. Twenty per cent showed more calcium than the key stone, 6 per cent a trace of calcium less than the key stone, and 54 per cent practically no calcium but nearly pure cholesterin. Pure cholesterin stones are much less dense than the biliary surrounding them and appear like bubbles of air.

Pfahler (10) concludes that by good technique and careful observation gall stones can be shown by the X-rays in more than 50 per cent. He often finds evidence of stone in only one or two plates of a series. His technique is to vary conditions as regards time of exposure and degree of vacuum.

Niles (111) says the intestinal canal should be thoroughly emptied when X ray plates are made for gall stones and no solid food taken for fifteen to eighteen hours previously

O'Brien (113) quotes extensively from American and European literature in regard to roentgen ray diagnosis of gall stones and gives some of his own observations. He thinks saline catharsis and fasting are valuable preparatory measures though roentgenoscopy has no place in direct diagnosis. George and Leonard (56) believe that only when some pathologic change has taken place in the wall of the gall bladder or its contents can shadows be demonstrated by the X ray. These changes may be thickening of the wall, a concentration of the bile or the presence of stones.

As regards the differential X ray diagnosis between renal and biliary calculus, Cole (25) draws these conclusions. In renal calculus the shadow is uniformly dense and usually single. If multiple the shadows conform to the pelvis and calices and the stones vary in size and shape. In biliary calculus the shadows are of variable density as a rule multiple conforming to the shape of the dilated gall bladder. Renal calculi are usually sharper and smaller with the plate posterior, biliary calculi with the plate anterior. He suggests a barium meal to demonstrate the position of gall stones.

Carman (21) reports a case in which communication existed between the first portion of the duodenum and the gall bladder. Diagnosis was made by means of the barium meal. The case was one of carcinoma of the stomach. Caldwell (19) believes that in only a small percentage of cases and then only when the gall stones contain a sufficient quantity of mineral salts will X ray plates show definitely the presence of stones. He thinks that faulty conclusions are likely to be drawn from X ray plates and the clinical indications of cholelithiasis are accurate enough to make a diagnosis. Probably from 50 to 60 per cent of cases are submitted to X ray examinations and of these perhaps one tenth will give reliable shadows of gall stones. In the other nine tenths the plates will show some hazy or suspicious shadows some of which may be due to stones and many to other causes even where stones are actually present. In this way the value of the X ray may easily be overestimated. Deaver (3) believes very little help is to be derived from laboratory or X ray findings. Too much confidence may be placed in an X ray diagnosis influencing the patient as well as the doctor to procrastinate because in gall stone

disease the danger is due to infection rather than stones. C. H. Mayo (100) says that too much dependence placed upon the X ray diagnosis of gall stones would be a backward step of many years.

PROGNOSIS

Hubbard and Kimpton (77) among 226 operated cases report that pulmonary complications developed in 14 and usually caused death, 31 died in the hospital as a result of or in spite of operation. The end results were ascertained in 91 cases, 74 were well after operation but 5 still had some indigestion, 4 were having trouble which was not considered due to gall bladder disease, 3 continued to have attacks of pain which might be due to gall stones and one was not well. In Lichty and Zurhorst's (9) report 137 patients were operated upon, 83 were cured, 13 relieved, 8 not benefited, 11 died within a month of operation and 14 could not be traced. Of the 11 deaths, 6 were common duct cases and 5 simple gall bladders. Of 8 who died later than one month, 4 died from causes other than gall stones. Of the 54 operated patients having cholangitis, 22 were cured, 10 relieved and 13 not benefited, two died within a month after operation and 2 others several years later from other causes. The pathology of these cases varied from simple chronic cholecystitis and pericholecystitis to suppuration and gangrene. Of 421 unoperated cases treated medically, the mortality was very little higher than those operated upon and because of suffering during attacks, anxiety, formation of drug habits and the limited diet necessary, the patients led almost useless lives.

Babcock (5) thinks that during the first stage of cholecystitis the operative mortality should be under 1 per cent, in the second 3 to 5 per cent and in the third it may be as high as 10 per cent. He thinks present day surgery is twenty to thirty years behind the pathology of gall bladder disease. Since 1911 he has drained the third stage cases under local anesthesia.

Tilton (154) says that the poor results which sometimes follow gall bladder operations are due to long delay which has caused extensive and incurable anatomical changes. Extensive adhesions, displacements of the stomach and duodenum etc. must in many instances remain after operation causing functional disturbances and pain. Eichmeyer reports from the clinic of Cotte 316 cases, 134 complicated by common duct involvement requiring drainage of the hepatic duct. Of these 78 were of a purely mechanical nature and 5 were fatal, 46 had severe

can rule out the gall bladder the diagnosis of appendicitis is made

Bevan (10) considers a carefully obtained history of greatest importance in diagnosis he excludes other condition by elimination he also takes into consideration the physical examination the laboratory test and X ray findings which are of little value for reason before stated He also lays great stress upon the theories of probabilities in making a diagnosis of lesion of the upper right quadrant Courvoisier law of great value in jaundice common duct stone if the gall bladder being contracted in 80 per cent while in jaundice from carcinoma of the pancreas it is dilated in 80 per cent

Einborn (19) reports his results with the duodenal tube in the diagnosis and treatment of gall stone disease He examined the bile directly and diagnosed probable cholecystitis by this means in conjunction with the usual symptoms in 40 cases were operated upon Of the 18 had gall stones removed clear bile and the other 7 a turbid duodenal fluid 5 had turbid fluid in extrabiliary tract lesion He says when turbid bile is found in the fasting condition is characteristic with stone usually present The incidence of his findings show that this method must have little value in the diagnosis of gall bladder disease Rehfu (28) uses a tube directed by himself for obtaining the duodenal content He claims that bile is always found in the case of stone no matter how deep the jaundice whereas in obstructing tumor it is absent He says the feces are acholic in duct obstruction with great increase in neutral fat

Cholesterol crystals Pehfu (18) in 50 cases 6 of which proved to be cholelithiasis found an increase of cholesterol in the serum over the normal of 0.0010 to 0.0018 per cent There is also an increase in nephritis syphilis diabetes typhoid tuberculous cancer and the acute infectious disease According to Reimann and Maun (30) a high cholesterol content has not helped in the diagnosis of gall stone because many of the upper abdominal lesions give higher readings Hene (4) reports in detail 8 cases to show that in the great majority of cases of cholelithiasis there is a hypercholesterinemia He thinks a cholesterol estimate is more valuable than the X ray In only 3 cases in a series of 128 did the cholesterol estimate not foretell the condition found at operation

Röntgenology In 1913 Case (6) was able to detect all stones in 30 out of 1000 cases examined by the X ray and during the same

year Cole found 6 out of 409 Pfahler estimated that he could detect gall stone in 74 per cent At the time their article was written Cole and George claimed they could diagnose gall stones roentgenologically in all cases Their technique was not radically different from that employed in soft tissue detail but required great attention to minute point They advocate the use of the Coolidge tube and an extremely small cone showing only a limited area on each plate If the plate are negative the gall bladder stomach duodenum and colon should be examined for adhesion For detecting calculi the matching of hard shadows either by superimposing one plate over another is the most valuable Roentgenographically gall stones are divided into two groups those that contain considerable calcium which can easily be shown and stones which contain none or only a trace of calcium When the calcium coating is thin which is the case in about 50 per cent the stones are difficult to detect while with increased density of the coating the ringlike appearance is more marked and easy to discover In per on under twenty five the contrast usually is not dense and the stone is so faint that it does not show even a dim peripheral ring Cole (26) states that after and sane to diagnose gall stone when they are composed of calcium or have a definite calcareous coating or nucleus By submerging gall stone in bile and making radiographs of them he found those with no calcium gave a negative shadow for example thinner than the shadow of the bile By submerging a gall bladder full of bile and stones under water which has about the same density as human flesh he found the calculi gave negative shadows but each was surrounded by a ring produced by the bile which was of greater density than the stone The most difficult stone to detect were those which had a nucleus of calcium surrounded by a cholesterol coating In his experiments he used a stone which contained just enough calcium to show in the limiting subject and this was the basis for his comparison Twenty per cent showed more calcium than the key stone 26 per cent a trace of calcium less than the key stone and 54 per cent practically no calcium but nearly pure cholesterol Pure cholesterol stone are much less dense than the bile surrounding them and appear like bubbles of air

Pfahler (20) concludes that by good technique and careful observation gall stones can be shown by the X rays in more than 50 per cent He often finds evidences of stones in only one or two plates of a series His technique is to vary condition as regard time of exposure and degree of vacuum

perforation runs from 22 to 54 per cent. In a series of 154 cases 5 per cent of the perforated and all those not operated upon were followed by fatal peritonitis. Price (16) says that the majority of cases complicating typhoid are overlooked until perforation of the gall bladder has occurred. He quotes Ashhurst who in 1908 collected 21 cases with a mortality of 61 per cent. Of 11 operated cases among 154 collected by Thomas the mortality was 54.6 per cent. The author in 1908 had collected 9 cases of cholecystitis complicating typhoid which had been operated upon and all recovered.

MEDICAL TREATMENT

Very little space will be devoted to this subject but there are a few points appearing in the literature that seem worthy of mention as adjuncts to surgical treatment.

Gerster (57) cites Schimulinsky who in 1911 reported a case of common duct obstruction following resection of the stomach with gastroenterostomy in which the patient's health was greatly improved by the feeding of his own bile. All of the bile discharged from the fistula 1000 ccm. in twenty-four hours was introduced into the stomach twice daily by means of a stomach tube. The improvement was so marked after two months that it was possible to make an anastomosis between the fistula and the jejunum. The patient recovered. He cites a case of his own of pericholecystic abscess, cholecystitis and complete obstruction of the common duct by stone. He first drained the abscess and did cholecystectomy without removing the stone. After a stormy convalescence complicated by cholæmic oozing an afebrile stage was reached with great emaciation. All the bile was then collected from the fistula and introduced into the stomach twice a day. Such marked improvement followed that after two weeks he was able to do a secondary operation. This patient also recovered. He concludes that the administration of bile in physiologic quantities is indicated in obstruction of the common duct.

Robinson (134) believes that among the well to do who are not obliged to work daily medical treatment is indicated in the early stages. His treatment is (a) dietetic in which all fats and alcoholics are eliminated sugars limited and vegetables freely employed (b) laxatives Carlsbad water etc. (c) daily exercise and (d) hexamethyamine. Boas (17) thinks it is a mistake to give morphine in gall stone colic as the pain can be relieved by hot drinks hot applications etc. He believes large meals especially at night

should be avoided. Putry (116) believes that the majority of cases of gall stones should be treated medically except where there are acute complications. Lanhorn (39) reports a number of patients with cholecystitis in which he introduced into the duodenum by means of a tube weak solutions of ichthyol and argyrol. The results were very inconsistent. He also used with some benefit in 6 cases duodenal alimentation for the relief of gastric and duodenal ulcers complicated by gall stones.

SURGICAL TREATMENT

This very important phase of the subject will be discussed in the most logical way possible giving the different views of the various authors under headings which follow each other in logical sequence. Generalization will be left for the reader.

Lichty and Zurhorst (9) advocate early operation in all cases of gall bladder disease. Hubbard (76) also believes that operation should be done in every case of cholecystitis or cholelithiasis as soon as the diagnosis is made. Tilton (154) believes the type of operation which should be employed depends upon the severity of the case condition of the patient and the experience of the surgeon. Koss (130) thinks all gall bladder and duct diseases should be treated surgically. Lothrop (94) says in regard to typhoid cholecystitis if the local signs progress and the gall bladder becomes palpable operation should always be done but if possible should be avoided. Burke (15) in discussing gall bladder operations during pregnancy says there is but little danger of abortion occurring. He places much reliance as an indication for operation on jaundice which is more common in pregnant women than in others. Borelius (14) advocates early operation in all cases. Peterson (110) says it is questionable practice to explore the gall bladder in operations for inflammatory pelvic lesions prior to breaking down the limiting adhesions. In pelvic operations for malignant disease the gall bladder should not be removed at the same time.

Relative frequency of cholecystectomy. Hubbard and Kimpton (77) in a study of 226 operated cases of gall stones report that cholecystostomy was performed in 177 and cholecystectomy partial or complete in 44.

Indications for cholecystectomy. In the opinion of C. H. Mayo (98) cholecystectomy is indicated where there are adhesions about the gall bladder or where infection persists. He also says (97) given sufficient symptoms for surgical intervention if the lymph glands along the ducts are

cases of cholecystitis principally because of the immediate and uninterrupted convalescence which follows the operation

Smith (150) says that he formerly performed cholecystostomy in gall bladder infections but that more recently he is inclined to favor cholecystectomy. He thinks that it is particularly indicated in phlegmonous inflammations of the gall bladder. If the infection has extended to the pancreas he would retain the gall bladder for drainage. Frank (55) considers that cholecystectomy is indicated in all cases of cholecystitis and in 80 per cent of cholelithiasis. He believes that in many cases of common duct stone with cholangitis the high mortality is due to trauma of the nerve supply of the liver. On this basis he uses gas oxygen anesthesia with complete nerve blocking dividing the operation into two stages complete drainage of the gall bladder and later removal of the obstruction from the duct.

Schultze (145) favors cholecystectomy in practically all cases except when the patient's condition is very bad. He thinks the common duct should be drained in these cases only when it contains stones or shows dilatation.

Gil (58) gives his indications for cholecystectomy as follows: (1) when the gall bladder is severely inflamed and the mucosa ulcerated; (2) when it is contracted contains a stone and the cystic duct is obstructed; (3) to cure an external fistula; (4) sometimes in connection with choledochotomy. Roman (135) concludes after operating upon 1000 cases for gall bladder and duct disease that cholecystectomy is the operation of choice. Bevan (10) advocates cholecystectomy where there are stones in the gall bladder or cystic duct and limits cholecystostomy to those cases where the gall bladder is but little diseased or to cases which are poor surgical risks. He does not recognize a so called strawberry gall bladder which demands removal. Dennis (38) thinks cholecystectomy should be performed in empyema unless the general condition is very bad.

Leede (89) concludes that when free HCl is not found in the stomach in gall bladder disease cholecystectomy should be performed but if present cholecystostomy.

In typhoid cholecystitis Price (16) thinks the gall bladder should be drained or removed as soon as the diagnosis is made. Swopc (153) secured 98.6 per cent cures after cholecystectomy whereas after cholecystostomy there were only 74.8 per cent cured the remainder being no better and many worse than before operation. Where adhesions are extensive or in acute suppurative cholecystitis he advocates cholecystectomy.

Lilienthal (93) says that in gynecological case where there are gastric symptoms and a fibroid if stones are present he first does cholecystectomy and operates upon the fibroid later.

Indications for cholecystostomy. Under the preceding heading many of the indications for cholecystostomy have already been mentioned. Those which follow have special reference to the operation as distinguished from those for cholecystectomy.

Babcock (5) recommends cholecystostomy in the third stage of gall bladder disease where the condition is not good and the difficulties are great. Coffey (23) advocates conservatism in dealing with suppurative or gangrenous cholecystitis. C. H. Mayo (98) says that patients with stone in the gall bladder where the infection has subsided can be completely relieved by removal of the stones and drainage. According to Judd (81) cholecystostomy should be the operation of choice where the infection is in the bile only and the tissues of the gall bladder are healthy.

Lund (95) recommends cholecystostomy in acute cholangitis in which removal would be difficult or the patient's condition is poor. He also thinks it or choledochenterostomy is indicated in pancreatitis with jaundice or where the common duct is strictured or likely to become so. Cowden (9) quotes Crile as saying that when the gall bladder appears normal and the cystic duct pervious cholecystostomy is the operation of choice and will not be followed by a return of symptoms. Buchanan (15) states that the worst that may happen after cholecystostomy is a second operation and this will seldom occur. Mapes (96) thinks cholecystectomy is unwarranted except where the gall bladder has been greatly damaged or is cancerous.

Shaw (149) says that when the common duct is involved it is good practice to conserve the gall bladder for drainage if the cystic duct is patent. Where the gall bladder has a long redundant fundus the excess portion should be amputated and a cholecystostomy performed.

Grant (62) reports 2 cases of perforation of the gall bladder and in his discussion advocates cholecystostomy in the majority of cases because the gall bladder has a definite function and drainage is much easier and less dangerous than removal. Gil (58) says choledochotomy and cholecystostomy are indicated in retained stone in the common duct. After extraction of the calculus the duct is sutured and a cholecystostomy performed.

Roysing in discussing the paper of Borelius

enlarged without disease of the duodenum or pancreas the gall bladder should be removed whether stone are present or not. In case of papilloma of the gall bladder the organ should always be removed. As regards the advisability of cholecystotomy or cholecystectomy (100) he asks the following questions. In which operation is the mortality higher? In the average relief obtained by cholecystotomy a great one that following cholecystectomy. He says that cholecystotomy gives a high percentage of cure if the infection subides and leave only tenderness but when cholecystitis is present a removal should always be done. As indication for cholecystectomy he gives (a) cystic gall bladder (b) empyema (c) strawberry gall bladder or cholecystitis sufficient to cause vomiting. Cholecystostomy gives a high percentage of cure when the disease is slight tenderness present and gastric symptoms absent. Cholecystotomy is indicated in associated pancreatic liver pregnancy or in old people where the recurrence is low.

Denver (5) favors cholecystectomy in practically all cases but in addition he drains the common duct by means of a T tube. He regards drainage as the most essential part of an operation on the biliary tract and thinks it should be prolonged. He believes cholecystectomy a life and cholecystotomy. In another article (5) he says that cholecystotomy will not cure all cases of gall bladder disease and in hydroptic empyema or impacted stone in the cystic duct the gall bladder must be removed. As regards results infective condition of the biliary tract are best treated by cholecystectomy. Cholecystectomy in the presence of jaundice and in the absence of marked change in the gall bladder is out of place. Cholecystotomy is then to be preferred. He lays stress upon the more certain presence of adhesion after cholecystectomy than cholecystostomy.

Kehr (86) thinks the only prophylaxis against cancer is early cholecystectomy for chronic cholecystitis. Babcock (5) advises cholecystectomy in the first stage of gall bladder disease but warns against injury to the ducts. In one of his cases he had a fatal leakage of bile and in another he punctured the hepatic duct. Since then he had 114 cholecystectomies in the first stage without any mortality. Erdmann (46) advises cholecystectomy in practically every case of gall bladder disease. Porter (15) gives his indications for cholecystectomy as follows (a) hydrops (b) calcareous or fibrous degeneration (c) chronic empyema (d) the so called strawberry gall bladder (e) carcinoma (f) ex-

tensive laceration or perforation (g) extensive gangrene. In all other cases he does cholecystotomy. Fowler (53) believes that gall bladder disease is a progressive inflammation from the beginning and should be treated by early cholecystectomy.

Tilton (154) says that in general cholecystectomy is to be preferred though in some very acute suppurative or gangrenous cases it is better to do a cholecystotomy as a life saving measure.

Guthrie (66) sent questionnaires to 43 prominent surgeons regarding cholecystectomy and cholecystostomy. The questions and answers follow. (a) What percentage of cases of cholecystotomy had recurrence of trouble? Thirteen answered a few recurrence. (b) Are you performing cholecystectomy more frequently than in the past? There were 36 answers of yes, of no. (c) Have the results of cholecystectomy been better than those of cholecystotomy? Again 36 yes, no. (d) In what cases do you consider cholecystectomy the operation of choice? The majority answered any disease of the gall bladder wall or damage to the cystic duct. (e) What are the contra indications to cholecystectomy? The most common answer was pancreatic disease and empyema. (f) As a rule do you treat acute empyema by cholecystectomy or drainage? Thirty three favored drainage. (g) How does the mortality of cholecystectomy compare with that of cholecystostomy? Eighteen reported the mortality the same 21 the mortality of cholecystectomy higher.

Porter (124) quotes Lane as saying that cholecystectomy is the operation of choice in cholelithiasis.

Lund (95) says in cholecystitis without stone there is often a thick walled gall bladder adherent to the pylorus omentum colon etc and in these cases cholecystectomy should be done. He also recommends it in acutely inflamed or gangrenous gall bladders if the patient's condition is good. He believes that if the common duct is subjected to trauma the gall bladder if not too much thickened should be saved for cholecystenterostomy. In undoubted pancreatitis with jaundice the gall bladder should be saved for cholecystenterostomy or external drainage. He believes the bladder should be removed in cases of cholecystitis to prevent the development of pancreatitis. His indications for cholecystectomy are the same as those already mentioned.

Lane (8) advocates cholecystectomy in all

grasping them without danger to the ducts. Another advantage is that the cystic duct can be traced to the hepatic by exerting a little traction. The author lays stress on exploring the cystic and common ducts with a probe before ligating the former.

Willis (166) says that in all cases after cholecystectomy there are extensive adhesions and his experiments show that even healthy bile if spilled will produce them. The combination of infected bile leakage with drainage of any kind is always followed by dense widespread adhesions and his technique is based on the elimination of both. He incises the hepatico duodenal ligament, dissects out the cystic duct, pulls it upward and ties it flush with the common duct with catgut. Another ligature is applied to both cystic duct and artery after which he cuts the duct between the two and the artery to the distal side and removes the gall bladder from within outward leaving peritoneal flaps. He then covers the stump of the duct and artery with a continuous suture which comes forward uniting the peritoneal flaps. Phemister (121) describes a method of controlling hemorrhage in cholecystectomy performed from without inward. He first separates adhesions, locates the cystic artery and duct and clamps both at the point where they are to be ligated. The gall bladder may now be removed without hemorrhage from the branches of the artery and when the forceps is reached the ligature is applied.

Richter (132) in discussing the technique calls attention to the following points. A peritoneal flap is left on both sides to cover the denuded surface. These flaps should not be sutured together but made to lie on the raw surface where they will adhere like Thiersch grafts. He thinks oozing is more important than adhesions. He crushes the cystic duct, ligates it with catgut and closes the abdomen without drainage. The stump of the duct should not be buried because of the danger of retroperitoneal infection. Arava (3) advocates fixing the transverse colon between the bile passages and the abdominal contents to prevent adhesions. Gwathmey (67) covers the stump with peritoneum in most cases and has seen no bad results. Philippowicz (123) says there is a difference of opinion as to the advisability of drainage of the common or hepatic ducts with cholecystectomy. He does not drain if there are no symptoms of infection of the duct. Most operators use the T tube for drainage. If the stone is in the pancreatic or duodenal portion Kocher's mobilization of the duodenum should be done. If the occlusion cannot be overcome

an anastomosis should be made with the stomach duodenum or jejunum.

Technique of cholecystostomy. Buchanan (12) agrees with Crile that in severe infections the gall bladder should be primarily drained and later removed if necessary. He anchors the gall bladder to the peritoneum before opening it and has seen no trouble following this procedure. He always makes an overstitch in the gall bladder with catgut and ties this tightly around the tube. If the bile flows freely within a few days the majority of cases recover quickly because the cystic duct is patent. Williams (165) describes a zigzag purse string suture for cholecystostomy, the object being to invert the edges and bring the peritoneal surfaces in contact with the tube and with each other after its removal. It amounts to nothing more than a continuous suture through all the walls passing in and out at different levels from the cut edge. Shaw (149) also uses an infolding stitch for cholecystostomy, the alternating stitches being on different levels on the opposing sides. Rhodes (131) reports a series of 133 cases of cholecystostomy in which he shortened the time of drainage six days by administering hexamethyltetramine after operation in doses of from 50 to 80 gr. daily.

Indications and technique for choledochotomy. Eisendrath (41) lays stress upon the possibility of stones in the common or hepatic duct escaping detection at operation. In these cases the calculi are in the retroduodenal division. He quotes Kehr as saying that in 40 per cent of the cases in which palpation of the common duct was negative stones were found in the retroduodenal portion. In 20 per cent of his cases common duct stones did not produce characteristic symptoms. In 50 cases where palpation was negative stones were found in 10. He gives the following indications for exploration of the common duct: (a) many small stones in the gall bladder or cystic duct; (b) enlarged thick walled common duct; (c) chills, fever or icterus; (d) recurrence of pain or symptoms of cholangitis after previous operation. Tilton (154) says that in chronic retention of stone in the common duct operative treatment is always indicated. Judd (83) does not think it advisable to open the common duct for exploration unless stones can be palpated or the clinical features suggest that stones or infection are present. Eisendrath's (41) method for choledochotomy is through a right rectus incision. Calculi in the gall bladder are removed and the opening closed with a forceps. By making traction the ducts are brought into view, adhesions are separated, the hepatico-

(14) say the gall bladder is sterile in over one half of the cases of stone and any infection is secondary Borelius drains through the cystic duct in cholangitis Borchgrevink prefers cholecystostomy in all cases and would rather do it repeatedly than remove the gall bladder

Incisions for operation Babcock (5) advocates a simple transverse incision along a line slightly below the ninth rib For better exposure he recommends Perthes triangular flap incision vertically through the right rectus muscle for three or four inches then transversely to the ribs suturing the muscle to it fascia before cutting the transversalis In some cases he uses the simple oblique incision after the plan of Kocher McArthur (103) describes an incision for gall bladder surgery as follows through the right rectus muscle cutting the fascia preserving the innervation by blunt dissection and in making the posterior sheath nearly transverse When the operation is finished the edge of the posterior sheath are whipped together with continuous catgut Bevan (9) incision begins by beginning at the epiform cartilage curving to the right to the middle of the rectus carried down over its center four to six inches and then curving concavely to the right completing the S The rectus muscle is split exposing the transversalis and internal oblique which with the peritoneum are divided through the same length as the original incision He does cholecystectomy in 90 per cent of the cases W J Mayo (10) modifies Bevan's incision beginning at the epiform cartilage extending directly downward one and one half inches and then dividing the upper half of the right rectus on a line with the costal margin and about one inch from it He uses this in secondary operations Judd (81) extends the incision to a point two inches to the right of the umbilicus through the superficial and deep fascia After entering the peritoneum he cuts the suspensory ligament of the liver uses the end as a tractor and when through sutures the ends together

Iobes (49) say that gall bladder and appendix work can be done through the lumbar incision usually used for kidney operation With it hernia is practically unknown and the right kidney can be reached if necessary The thoracic nerves (149) bear the same relation to the linea transversalis as to the rib This should be remembered in gall bladder operations

Technique of cholecystectomy Deaver (34) describes the following method The free border of the gastrohepatic omentum is freed of adhesions the edges of the wound widely re-

tracted and the liver and gall bladder pulled downward forward and then upward making taut the cystic duct and gastrohepatic omentum The diverticulum at the junction with the cystic duct is grasped with forceps and traction made separating it from the border of the gastrohepatic omentum to avoid injury to the common duct A small incision through the omentum exposes the cystic duct which is clamped with forceps and divided with a cautery The common duct is now explored for stones the cystic artery clamped and divided and duct and artery ligated separately The gall bladder is next dissected from the liver from within outward uniting the edges of its bed with catgut as dissection progresses In this way the operation is bloodless and the liver surface covered by the time the gall bladder is out The incision in the omentum is closed but the stump of the cystic duct not covered A small rubber tube is carried down to the stump of the cystic duct and retained for four or five days When the common duct is to be drained it is opened and a T tube introduced He recommends early drainage of the common duct as a cure for pancreatic diabetes

Judd technique is based on the possibility of hæmorrhage and injury to the common duct He performs the operation from below upward as follows an oblique incision through the abdominal wall adhesions to the liver are separated forceps are applied to the fundus of the gall bladder and traction made a second forceps grasp the neck of the gall bladder pulling the lower part away from the cystic duct and exposing the common duct the cystic duct and artery are freed and two forceps applied including both in one grasp the cystic duct and artery are divided with ligation of both in one catgut ligature traction made on the upper of the two forceps on the cystic duct and the gall bladder is separated from liver a continuous catgut suture approximates the edges as the gall bladder is removed a catheter drain is inserted to the cystic duct

Seelig (146) advocates the removal of the gall bladder from without inward He says that in cholecystectomy there are three sources of hæmorrhage from the liver from branches of the cystic artery and from the cystic artery itself By beginning the dissection at the liver edge hæmorrhage from the first source is controlled by a small gauze pack Bleeding from the branches as the separation proceeds is often anticipated in finding and ligating the main vessel By this method the gall bladder may be used as a tractor in exposing the bleeding vessel and

two row suture anastomosis after the plan of a gastro-enterostomy. When this cannot be done the method of Sullivan is the best. He inserts a rubber tube into the stump of the common or hepatic duct carries it into the duodenum and surrounds it with omentum. After the tube passes a fistulous tract is left. The only objection to this is the possibility of fibrous contraction taking place. The author describes an operation in which he turns down a flap of duodenum sutures a rubber tube into the end of the common duct closes the opening in the intestine around the tube and forms a new duct by suturing the duodenal flap around it. He thinks this is the operation of choice. Hagler (68) reports a case in which he successfully employed Sullivan's method under very adverse conditions. The final result was perfect. Riggs (133) reports a case of carcinoma of the end of the duct in which he removed the tumor and implanted the duct into the duodenum. Capelle (20) records a case presenting the symptoms of obstructive jaundice. At operation the head of the pancreas was hard and nodular. He cut the common duct close to the pancreas and implanted it into a loop of jejunum which he fixed to the mesocolon and then performed cholecystectomy. The patient recovered and remained well.

Holmes (14) believes that in 16 per cent of case of congenital obliteration of the ducts operative relief is theoretically possible. As soon as the diagnosis is made an artificial passage should be made into the duodenum or if this cannot be done external drainage is indicated and a secondary repair made later.

Resection of the common duct. W. J. Mayo (10) says in regard to resection for strictures that usually there are many adhesions to the gastro-hepatic ligament which must be separated. The stricture is dissected out until the ends of the hepatic and common ducts lie free when several stitches approximate the tissues behind them and the ducts themselves are united with catgut. The anterior wall of the common duct is split downward one third of an inch to increase the size of the lumen and it is drained with a T tube for three weeks. Where the strictured area is in the pancreatic portion of the duct the latter may be opened above forceps introduced and the stricture divulsed or in some cases it may be necessary to open the duodenum and expose the papilla. Bazy (7) reports 2 rare cases in 1 of which hepatico duodenostomy was performed for the obliteration of the common duct and in another choledcho-duodenostomy for obliteration of the terminal portion. Both cases re-

covered. Werelius (163) records a case in which during cholecystectomy by another surgeon the common duct had been severed and both ends tied. At the secondary operation the stumps were found separated one and one half inches. He made an end to end anastomosis using a fine running suture of silk. The patient made a good recovery and the biliary fistula closed. Riggs (133) operated upon a case of fibrous stricture at the junction of the common hepatic and cystic ducts. He resected 3 cm. and made an end to end anastomosis after the method of Carrel for blood vessels. The patient recovered. Phemister (12) reports a case in which during cholecystectomy the hepatic duct was ligated with the cystic artery. Complete obstruction resulted and five days later the ligature was removed. After this all the bile came through the fistula. Six weeks afterward at a third operation the hepatic duct was exposed and the ends approximated around a T tube. The patient made an uninterrupted recovery.

Temporary cholecystostomy for gastric lesions. McArthur (104) advises temporary cholecystostomy in some cases of gastric surgery with the object of introducing mildly alkaline salt solution or per cent dextrose into the duodenum. The drop method 5 to 10 drops per second is used. In some cases he places the tube in the common duct instead of the gall bladder.

Preparation for operation. Both Child and Rosenthal (140) think in every case of cholelithiasis without jaundice a cholesterolin estimate of the blood should be made. If hypercholesterinæmia exists the drainage tube should not be removed until the blood and bile show a normal cholesterolin content. Further accumulation of cholesterolin should be controlled by placing the patient on a nearly fat free diet.

Anesthetics for gall bladder operations. The majority of operators use ether nitrous oxide anesthesia or a combination of the two. Babcock (5) uses local anesthesia for all gall bladder operations that are poor risks. 1 per cent novocaine for the skin and subcutaneous tissues and 0.25 per cent for muscle fascia and peritoneum. For patients in good condition he prefers spinal anesthesia.

Exploratory laparotomy for gall bladder disease. Ransohoff (127) emphasizes the point that in severe intra abdominal infections the abdominal wall is so rigid as to preclude exact localization of the lesion. Therefore exploratory laparotomy should be done. The evidence of intra abdominal disaster is sufficient indication for operation. Segura (147) thinks that in every case in which

duodenal ligament is identified and the peritoneum over the common duct is divided. Two traction sutures are inserted in the wall of the common duct and it is incised. Stones are searched for by means of a spoon which passes up into the hepatic duct and down into the ampulla. A flexible probe is passed through the papilla into the duodenum and drainage of the common duct is effected by a T tube. The opening of the duct is closed around the tube with fine catgut and cholecystectomy is then performed.

Harrigan (10) describes Kocher's method of mobilizing the duodenum for exploration of the retroduodenal portion of the common duct. The posterior peritoneum is incised where it passes from the duodenum to the anterior surface of the kidney. By freeing the duodenum in this way the duct is carried with it and may be directly palpated. The chief value of the mobilization is that the tone may be pulled up into the supraduodenal portion. The author describes a method of removing calculi impacted in the ampulla. He holds the duodenum forward indirectly lifting up the pancreas and makes a small incision through the pancreas directly over the tone. A cigarette drain is then placed in Morrison's space and cholecystotomy performed. He found in the literature 3 other cases of transpancreatic choledochotomy 2 of which recovered and 1 died. There is very little danger of hæmorrhage injury to the duct of Wirsung or pancreatic fistula though he admits the rare objection.

Duodenotomy. Todd (155) in an article on duodenotomy for common duct tone cites 128 cases from different operators up to February 1915 with 9 per cent. case. There is a 1 death among the latter. The indications for duodenotomy are stone in the ampule of Vater or low in the common duct. He cites McBurney as having done the first operation in 1891. The chief reason for performing duodenotomy is inability in certain cases to mobilize the gut because of adhesion. He incises the duodenum, removes the tone from the ampulla and then closes the intestinal opening by means of two layers of suture.

Cholecystenterostomy. Shaw (149) gives the following essential conditions for successful cholecystenterostomy: (a) a patent cystic duct (b) the gall bladder must be capable of maintaining a tubular function (c) if possible a cholecystoduodenostomy should be performed (d) cholecystojejunostomy is easier and should be done in malignant cases (e) a large opening

should be made (f) Morrison's pouch should be drained (g) cholecystocolicotomy should not be done. Erdmann and Heyd (47) say that in carcinoma of the bile ducts a cholecystogastricotomy should be performed because cholecystenterostomy may produce kinking and cholecystocolicotomy always carries with it the danger of ascending infection.

Cholecystgastrostomy. Barr (6) reports a case of cancer of the pancreas with obstruction of the common duct in which he performed an anterior cholecystgastrostomy. The patient had little reaction afterward and was relieved from the most distressing symptoms. He says the operation is easily performed and is satisfactory in its practical results. Jacobson (19) has collected from the literature 16 cholecystgastrostomies and records a case of his own. He concludes that it is the operation of choice in malignant disease as the bile does not interfere with digestion and there is no danger of ascending infection.

Anastomosis of the common or hepatic duct with the small intestine. W. J. Mayo (102) has made direct union of the common duct to the duodenum by Coffey's method several times after operation for cancer. Walton (161) writes on irremovable obstructions of the common duct divides the cases into two classes: (a) where the gall bladder cannot be anastomosed and there is no biliary fistula here there is always dilatation of the common duct (b) where there is no gall bladder but a biliary fistula with no enlargement of the common duct. In the first class the duct is easily united to the duodenum by button suture. In the second group there is great difficulty and two types of operation are advocated: first hepaticoduodenostomy or hepaticojejunostomy where a portion of liver is excised and the opened small intestine sutured into the defect with the hope that some of the intrahepatic ducts will drain into the intestine. The danger here is from infection. The second type consists of dividing a loop of jejunum implanting the proximal end into the side of the distal and passing the proximal end of the distal segment subcutaneously into the side of the biliary fistula. The danger here is that a fistula may persist. The operations dealing directly with the common duct are first the use of autogenous grafts or the patient's appendix a segment of vein or a tube of fascia these are most uncertain when applied to the human subject. Second direct implantation as performed by Mayo Packard and Harrington. The former has successfully united the hepatic duct to the duodenum by a

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icterus persists for more than two months and an exact diagnosis cannot be made exploratory operation should be performed

Contra indications This subject has been considered under previous headings. Andries (1) says the only contra indications to early operation is some condition that would hazard the patient's life. He believes early operation would eliminate the necessity of performing cholecystectomy and thus preserve the gall bladder for future function. An infected gall bladder with a temperature above 100 should not be operated upon until the temperature has dropped. In greatly distended gall bladder all that is indicated is drainage and no attempt should be made to remove the stones with instrument at time of operation.

This review has of necessity been greatly abbreviated. The reader is therefore recommended to consult the original articles for more detailed information.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Ryan L. Plastic Surgery *Ill. s. M. J.* 1918, v. 64

In the application of plastic surgery one must consider the condition of the disease present and its eradication at the time the plastic work is attempted. This is of first consideration. Usually a defect can be repaired in tissue in the quarter of one third the time that the thorough painstaking removal of disease requires. Second the removal of sufficient tissue to cover the defect is usually one half the length of the defect. Third due consideration must be given to the blood supply of the transplant.

The consideration of the blood circulation must be carefully weighed on one side of the balance against the patient's resistance, tractability, age, etc., on the other.

The transplanted tissue if possible should be of the same type as that in the location to be repaired. Large pedicled flaps are of the greatest advantage. If cut the full thickness of the skin and subcutaneous tissue with at least one centimeter border they can be transferred long distance and heal quickly. They are nearly the color of the surrounding skin. This is especially true when the flap turned reflected contains a large blood vessel through its center. These flaps should be allowed to become fully vascularized before the pedicle is cut. Two weeks is not too long if there is no indication for the pedicle being cut sooner.

The appearance of a linear cicatrix may be very much improved if the concave border has cut it in a V-shaped flap at the base of the V to add the future line. This also is a straight flat contour and is concave to face for suturing. Otherwise there is always puckering from redundancy. Sometimes instead of one V the removal of many V-shaped pieces. This only increases the number of scars.

FD RD L Co L

ANÆSTHETICS

H. G. D. E. A Few Difficulties in the Administration of Ether *C. l. d. M. d.* 1918, 3

The Committee on Anæsthesia of the American Medical Association in 1912 reported that (1) the use of chloroform as an anæsthetic for major operation is no longer justified (2) for minor operations its use should cease (3) that sometime found convenient for initiating anæsthesia in alcoholics or other difficult subjects. The value of the first and second sweeping statements is manifest. Regarding

the third the unanimity of reports of the danger attending chloroform anæsthesia justifies the statement that chloroform should not be used in the use of the anæsthetic. A large number of deaths also occur due to delayed chloroform toxæmia.

When possible the anæsthetist should visit the patient twenty-four hours before operation making a careful examination and winning her confidence. This will do much to ward off controlling the period of excitement and lessening shock. Not much importance should be attached to the pulse rate or to evidence of vital disease as cardiac muscular compensation is much more important and can easily be noted by the Stang test. This is made by asking the patient to hold her breath if she is unable to do so for at least 30 seconds acidosis or poor cardiac compensation may be suspected. In cases suggestive of the lymphatic stasis type anæsthesia must be induced and maintained with great care.

In selected cases morphine administered one hour before operation will aid in a smooth induction and maintenance of anæsthesia. Before operation the anæsthetist should decide the depth of anæsthesia to maintain. Patient should not be moved after the anæsthetic has been started as quiet and comfortable induction of the anæsthetic. This is best done by giving the anæsthetic on the operating table. Short-necked persons breathe better when the head and shoulders are on a plane higher than the abdomen provided that the head is not tilted. Patients should be trapped before starting the anæsthetic or at least the beginning of the third stage otherwise excitement follows. The room should be quiet and no relatives should be admitted.

A drop of a 5 per cent solution of oil of bitter orange in alcohol pipetted on the mask is of benefit especially in children. The mask should be held a few inches from the face in the beginning and as tolerance becomes established brought closer and kept covered with a couple of towels to prevent a small penning for droppings. A quiet conversation between the administrator and the patient was found of aid by the author.

Prevented imperfect breathing may be due to no breathing too strong a vapor or fear of the patient to breathe. Encourage them to relax and patience usually overcomes this. If this breathing persists after consciousness has been abolished rub the lips briskly with gauze or the finger tips. Sponging out the pharynx will restore the respiratory rhythm. Those with edematous pendulous lips may give trouble in the second stage. The lip

being sucked in during inspiration allowing little air or ether vapor to enter. This can be remedied by a dental prop or gag. When morphine has been given and shallow breathing occurs the anæsthetic must not be crowded a few drops of aromatic spirits of ammonia on the mask or lip friction often corrects this. In heavy smokers the anæsthetic vapor may excite cough retching or vomiting. This can be helped by allowing the patient to count aloud or placing him on his side.

There are two important reasons for lessening or controlling the excitement and intoxication phenomena during incipient anæsthesia: (1) the danger of too much ether vapor inhalation and (2) the muscular spasm which may introduce an asphyxiating factor. These can be eliminated by care and patience although in some cases usually in alcoholics tobacco and drug addicts difficulties will arise in spite of the best care. To secure complete muscular relaxation it is best to give some preliminary narcotic and induce anæsthesia slowly and evenly at times it is very difficult to accomplish. In these cases raising the patient's head and shoulders at one end of the table and his pelvis at the other should be tried. Late retching coughing and vomiting never occur during profound anæsthesia and should never be permitted to occur swallowing being an early indication of impending vomiting and a warning to push the anæsthetic. Hiccough is most common during intestinal manipulation and is difficult to relieve. If it occurs early it often ceases after the skin incision.

Respiratory arrest may be mechanical from (1) occlusion of the upper air passage (2) substance within the upper air passage (3) conditions directly preventing lung expansion. It may be paralytic from (1) an overdose of anæsthetic (2) anæmia or (3) reflex action. The cause must be found and removed. Keeping the lower jaw pressed forward will prevent spasmodic closure of the air way this also being accomplished by an artificial air way. The prone and semi prone positions may embarrass respiration and if marked the patient should be put in the dorsal position and routine methods adopted for restoring respiration. Should acapnia ensue respiration must be used. Lip friction sponging of the pharynx and tongue traction are of aid and in desperate cases artificial respiration or laryngotomy must be resorted to.

To prevent circulatory failure and shock special precautions must be adopted. Violent purgation must be avoided the room kept warm morphine given when indicated the body surface and in testines exposed as little as possible careful dissection done delay in anæsthesia and in operation avoided and the Trendelenburg position adopted. If the pulse fails entirely the Jew's pendulum swing may be tried. Ether preceded by morphine and atropine is a valuable prophylactic against circulatory failure. Grave circulatory shock is almost always met with in deep anæsthesia consequently if the operation is of such a nature that shock is

likely to arise the depth of the anæsthesia should if possible be lessened before the critical period.
H. H. GREFFITH

Pellot J. A New Method of General Anæsthesia (Nouveau mode d'anesthésie générale) *Presse méd. Par.* 1918 xxvi 405

The author makes a new mixture which he calls hypnethyl ether composed of ethyl chloride ether and chloroform in the following proportions for 100 ccm ethyl chloride 15 ccm ether 3 ccm chloroform ccm

He has induced more than 3500 anæsthesias of varied lengths with this mixture in all kinds of operations. He uses a special apparatus which permits the exact dosage to be administered at the desired moment.

The author claims that anæsthesia is rapid with a minimum of excitation that the dosage of anæsthetic is reduced to a minimum that postoperative complications are rarely observed and that awakening is easy.

The construction and method of using the special apparatus are described in detail. This method of anæsthesia is contra indicated in abdominal hysterectomies and generally in major abdominal operation lasting more than fifteen minutes.

W. A. BRENNAN

Guisez. General Anæsthesia by Intubation (Anesthésie générale par l'intubation) *Presse méd. Par.* 1918 xxvi 441

During the past two years the author has observed 330 important operations on the head face and neck carried out under laryngotracheal intubation with a rubber tube. Besides the unquestionable advantages which this method gives such as asepsis of the operating field impossibility of aspiration of blood and the simplification of all bloody operations in the regions referred to there are other advantages observed among which particularly the avoidance of postoperative chloroform vomiting is prominent. In the 330 cases the author did not observe aphonia nor other complications in the respiratory tract.

The general technique has previously been described. A sound somewhat smaller than the size of the glottis is introduced after the patient has been anesthetized by the Ricard compress. The sound is not pushed farther than the middle of the trachea. A close tamponade insures the patient's respiring through the sound the titrated Ricard's mixture alone. The tampon is pharyngeal when the operation is on the nose sinus or face and inferior pharyngeal when the operation is nasopharyngeal or buccal.

Deglutition is impossible. Neither blood nor pus can fall into the respiratory passages and danger of bronchopneumonia by deglutition is removed. Hemorrhage is considerably reduced and asepsis is more easily realized. The technique of certain operations such as the removal of nasopharyngeal pol-

is preferred as it is not necessary to put the patient in the R. position.

Especially noticeable is the almost complete elimination of chloroform nausea and vomiting. In only 6 of the 330 cases two or three vomitings occurred on the day of operation and the rest as complete absence of nausea. In 56 other operations without intubation but in which the same chloroform mixture was used, no per cent post chloroform vomiting as observed.

In the ordinary procedure there is abundant buccal and pharyngeal secretion and the patients make numerous deglutition movements to eject saliva. In intubation not only is deglutition impossible but the secretion is considerably reduced and only in a few cases as it necessary to remove mucus from the trachea during operation.

The author is of opinion that generally post chloroform vomiting is due to deglutition of irritant substances especially chloroform vapors. If as in intubation deglutition is prevented post anæsthetic nausea and vomiting almost completely disappears. W. A. B.

SURGICAL INSTRUMENTS AND APPARATUS

Parson M. G. A. B. D. and Some Appliances for Gunshot Wounds of the Femur and Blunt Injuries. 98, 86.

The bed is an extension of the sectional mattress idea with this addition that not only the mattress but the whole of that part of the bed that underlies the wound can be removed together giving unimpeded access either for dressing the wound for radiography or for ordinary nursing purposes so that it is unnecessary to move the patient.

It consists of an ordinary tubular frame arm bedstead with the spring mattress removed and replaced by tight canvas sling, inches deep, fastened by straps and buckle to one side bar of the bedstead and by metal hooks or a quick release contrivance to the other. Upon the tight slings lie the mattresses in three or more sections. For a femur case one square biscuit mattress is under the patient's head and body, another under the lower part of the legs and a small piece of mattress lies immediately under the wound and is the one removed with its corresponding canvas for dressing purposes.

The bed stands 36 inches high, its head supported on a wooden trestle, the foot on a trestle or hung from the roof by chains which can be regulated to tilt the bed. A movable arch of round iron resting on the side bars of the bed affords means for suspending the Thomas splint or the pelvis of the patient if necessary to expose a large part of the back or buttock at a time.

The femur apparatus consists of which can be used on a patient arriving at the base hospital with the leg in a Thomas splint. Complete immobilization and extension of the thigh with greatest freedom of the ankle and knee can be attained without removing the Thomas splint. After the patient has been radiographed Besley's roller callipers with eight wheels and pulley extension are applied to the femur just above the knee the points being inserted down to the bone but not penetrating it. A subsidiary hingable plant is attached to the Thomas by a thumb screw to the level of the knee joint and the weight of the leg below the knee is transferred to this. The femur thus has direct and efficient extension through the callipers in its own long axis while the leg has no extension at all and can be flexed as much as desired. The patient's foot is suspended from a foot piece. The leg is bare below the knee and is massaged and moved daily.

The patient with the whole apparatus can be carried without difficulty. V. C. H. T.

SURGERY OF THE HEAD AND NECK

riorly which presses on the anterior border of the ascending ramus and so prevents it from being drawn forward and upward

The zygomatic screw is the most certain method of controlling any badly displaced posterior fragment. The posterior fragment is pulled down into position forcibly, preferably by forceps introduced through the wound. An incision is made over the zygoma, a hole is drilled through the latter and the coronoid process, and a long thin screw (three-fourths of an inch) is passed through both. If the other end impinges on the skull so much the better.

He advocates the use of the gutter splint in the control of downward displacement of upper jaw fragments.

In fracture of the neck of the condyle and coronoid process the lower or anterior fragment must be placed in such a position as to secure good alignment and apposition. The fragments may be held in position by intermaxillary wiring either by silver wires around the teeth or if as frequently happens the upper jaw is edentulous four holes are drilled, two in the upper and two in the lower jaw at about the level of the roots of the incisor teeth, crossed silver wires are passed through and the mandible is thus laced up firmly to the maxilla in the desired position. The same method is applied to a fractured coronoid.

In fractures of the symphysis he uses either intermaxillary wiring or bolts the fragments together with a metal bolt passed through the lower border of the mandible posterior to the symphysis.

For the control of comminuted fragments the author has devised a splint which he calls the screw lever splint. It consists of a cap fitting over the retained teeth with arms passing out of the mouth and under the mandible. To the ends of these arms is hinged a padded lever which by being depressed by a screw anteriorly is raised in an upward and forward direction posteriorly. In use the teeth are pressed downward into their sockets, the fragments are pressed upward and are clamped between the cap and the pad with an increasing pressure the teeth and fragments are both controlled and dead spaces eliminated.

In edentulous cases he applies the interdental splint method to the lower and external border of the mandible.

He concludes his paper as follows:

1. There is or should be no best method of controlling fragments. Each case should be treated individually according to its requirements.

2. Control and not absolute immobilization of the fragments should be the aim of any method.

3. The utilization of function and perhaps slight mobility of the fragments from as early a time as possible is the best stimulus to union.

4. A conservative line of control should be adopted whenever possible, i. e. loose teeth and small fragments should be retained and controlled with function rather than be sacrificed to obtain an earlier but inferior result. G. W. HOCHREIN

Gatewood L. Technique of Perineural Anesthesia for Radical Surgery of the Maxillary Sinus *Laryngoscope* 1918 xviii 610

The two nerves to be injected are the infraorbital and the posterior superior dental. The technique for blocking these nerves is as follows: To inject the infraorbital nerve the infraorbital canal is palpated with the index finger, this being located two-fifths of an inch below the middle of the infraorbital ridge; the finger is kept on this point. With the thumb of the same hand the lip and cheek are drawn up to expose the field of operation.

The needle is inserted into the buccal fold slightly distal to the apex of the canine teeth, care being taken to avoid penetrating the alveolar process. The needle is now passed upward and slightly inward for three-fifths of an inch, infiltrating the tissues slowly as the needle is advanced. Having inserted the needle to the distance above stated, the surgeon is in the region of the infraorbital canal of the facial surface of the maxilla. Here the remainder of the anesthetic solution (2 ccm. of 2 per cent novocaine) is deposited, this being felt by the index finger. Gentle massage of this area will hasten the absorption of the anesthetic, producing proper anesthesia of this nerve and its branches.

The injection of the posterior superior dental nerve is guided by the condyle of the palate process of the maxilla. The point of insertion of the needle is in the buccal fold corresponding to the middle of the distobuccal root of the second last tooth from the condyle, this being the first or second molar respectively depending upon the presence or absence of the wisdom tooth. The needle is now passed upward backward and slightly inward, passing over the apices of the buccal roots of the second or third molar as the case may be, using an angle of about 45° to the occlusal plane of the teeth. The tissues are infiltrated slowly as the needle is pushed forward and the remainder of the anesthetic solution (2 ccm. of 1 per cent novocaine) is deposited after the needle has disappeared for about four-fifths of an inch.

The advantages of conductive anesthesia over the infiltration method are: (1) less anesthetic is required; (2) anesthesia is produced with less pain; (3) the duration of the anesthesia is greater; (4) less trauma is produced and the danger of infection is not so great. OTTO VI ROTT

Selfridge G. Plastic Surgery of the Nose and Ears. *Calif St J Med* 1918 xvi 416

This paper is devoted to a discussion of five conditions which call for intranasal surgical treatment, namely: hump nose, long nose, drop nose, twisted nose and prolapsed alar cartilage, with a brief description of the treatment of protruding ears.

In correcting hump nose, an incision is made in front of the lateral cartilage in many instances on

both sides and is carried to the limits of the field of the proposed operation. The skin with the periosteum is elevated from the nasal maxillary junction of one side to the corresponding point on the other side. The hump is then removed with a scalpel and the edge beveled so that the nose will not appear too broad in the dorsum after the hump has been removed.

Long nose is corrected by first making an incision at the mucocutaneous margin on both sides of the septum then cutting off the ends of the triangular cartilage and then a strip of the mucous membrane or the entire transalar cartilage may be exposed by a submucous dissection and a wedge-shaped piece of cartilage removed. The incision is made anteriorly to the lateral cartilages and the skin and periosteum is carefully elevated over the entire nose. The incisions in the septum are then sutured and covered with a strip of gauze soaked in tincture of benzoin compound.

It also seems wise to carefully map the plate area as well as the bridge of the nose with oil soluble solution. No suture is necessary in the incision anterior to the lateral cartilage. A thin plate is very carefully applied over the bridge of the nose from cheek to cheek and around the ends of the nose from the nasofrontal junction on both sides. No internal packing is necessary.

Drop nose may be due to an overdevelopment of the angular cartilage or it may be a result of injury. In the former the procedure used in the correction of long nose is to be followed. In the traumatic type a pocket is directed in the membranous septum and inlay of bone taken from the septum or the ninth rib. The maxillary cartilage is elevated. A preoperative dissection and maxillary suture line is placed. The skin is cut through with a scalpel or a Lothop slot forceps. The attachment of the nasal to the frontal bone is cut. The chin is chiseled or broken with a mallet. The nose is fully supported to hold the position.

Prolapsed alar cartilage is a condition frequently associated with dislocated columella cartilage and defect of the septum. It is corrected by removing an elliptical piece of the mucous membrane then carefully exposing the lateral cartilage and removing about one eighth of an inch of the cartilage. Two or three silk sutures are introduced in the line of the incision and gauze soaked in colloidal solution of benzoin compound.

Protruding ears are corrected by cutting an ellipse of skin from the back of the ear and the neighboring mastoid with the superficial fascia. The ear is then taken to expose the periosteum and perichondrium which are stitched together with chromic catgut. The skin is closed with silk running gut or horsehair. Should it be necessary to remove a portion of the cartilage in the region of the antihelical second ellipse is cut. The cartilage exposed and the piece most carefully dissected from the anterior skin surface.

The author emphasizes the importance of absolute asepsis in the performance of these operations. He presents case reports illustrating the different types of operation and photographs showing the condition before and after operation.

G. W. H. HREIN

Payn, R. L. J. Cranial Decompression for Head Injury Accompanied by Signs of Intracranial Pressure. *Ann. Surg.* 1918, 68: 345.

The author reports 9 consecutive cases of severe head injuries accompanied by marked increase in pressure in which subtemporal decompression was done in every case. Twenty-two of 175.86 per cent of the cases recovered while 0.24 per cent died. In the last 7 successive cases chosen for operation there was only one death following decompression.

Head injuries are divided into two types mild and severe. The mild cases recover without development of high increases of intracranial pressure. In only in the severe type of head injuries accompanied by a marked increase of pressure that decompression should be considered.

The indications for decompression in these severe head injuries depend on the signs found from study of the pulse rate the eye ground the spinal pressure and the systemic blood pressure.

With reference to contraindications for operation on the author has never seen a case of acute high intracranial pressure with a pulse of 45 to 50 recovered by operation if the case was left unoperated until the pulse in the second series had reached 95.

Results are much better in these cases following the procedure in that the threatened life of the medulla and the rest of the brain is relieved by a cranial decompression.

Dr. Martel, C. J. and S. G. Und. *Lo. J. An.* 1918, 11: 11. *Bull. S. d. P.* 1918, 1: 364.

In 1913 Dr. Martel had the idea of attempting craniotomy under local anesthesia in the area of the operation in the cerebellar area. His first attempt made in that year for a large cerebellar tumor was eminently successful. Numerous similar operations were done through 1913 and the first part of 1914.

Since 1913 Dr. Martel operated under local anesthesia for 6 pontocerebellar tumors. In 2 of these cases exploration showed that the tumors were inoperable. In the 4 other cases the operation was carried out with great difficulty and quite successfully. 3 died subequally from postoperative complications.

Since then the outlook of the Dr. Martel has not changed. Harney Cushing has adopted the method and has obtained all the results that the author claimed. Under Cushing's was a firm advocate of general anesthesia in cerebrosurgery.

Dr. Martel makes a number of subcutaneous

injections in the area to be operated upon. The fluid infiltrates between the skin and periosteum. The needle is pushed down to the periosteum at intervals of 3 or 4 cm. An absolute anaesthesia of the bone, periosteum and even of the dura is obtained.

Local anaesthesia has the following advantages:

1. The patient can be put in a comfortable position both for himself and the surgeon.

2. The patient can change his position to facilitate the operation.

3. By permitting an elevated position of the head it diminishes the volume of the brain and the cerebellum makes the extraction of tumors easy and diminishes venous hemorrhage. Ether on the other hand increases arterial tension. It also causes a hypersecretion of the cerebrospinal fluid and increase of intracranial pressure.

4. Local anaesthesia eliminates vomiting and its operation to be done with the greatest gentleness.

However local anaesthesia in cerebral surgery has few advocates. It is troublesome and calls for great patience but there is just as much difference between a trepanation done under local anaesthesia and one done under the usual methods as between a craniotomy done in the Trendelenburg position and one done with the patient lying flat.

Discussion showed that local anaesthesia was used by a large number and that the results obtained were excellent. W. A. BRENNAN.

Sicard, Dambrin and Roger: Observation at Autopsy of a Cranial Bone Plate Ten Months After Its Insertion. (Contrôle autopsique d'une plaque osseuse crânienne après dix mois d'insertion). *Bull. et Mém. Soc. méd. d'op. de Par.* 1918, xlii, 649.

In a soldier in whom a cranial defect had been repaired by a bone plate and who died ten months later the authors had the opportunity of examining the changes which had taken place in the plate the ten months of its insertion. From their examination and findings they deduce that:

1. A thoroughly sterilized bone plate is well tolerated by the tissues.

Its local maintenance by simple catgut sutures the course of the operation suffices for its ultimate adhesion.

3. This bone plate is rapidly overlaid on its two sides by a very resistant fibrous membrane which completely covers it and which adheres solidly to the surrounding tissues.

4. In the absence of suppuration and under conditions of normal cicatrization without incident the one plate should only be attacked and absorbed after a relatively long period since in this case ten months had elapsed and the internal face of the plate was but very slightly absorbed.

While admitting the possible absorption of dead sterilized bone the authors think that the fibrous layer already dense, firm and hard after ten months would later even to a greater degree offer

resistance to absorption and thus be a greater protector of the plate. For all these reasons the authors think that the bone plate has all the advantages demanded in cranial plastics. W. A. BRENNAN.

Cushing: II. Tumors of the Nervus Acusticus and the Syndrome of the Cerebellopontile Angle. Philadelphia: W. B. Saunders Company, 1917.

The studies extend over a period of ten years in Baltimore and four years in Boston and are based on thirty cases selected from the following series. In the Baltimore collection there were 337 patients with the diagnosis of brain tumor with 57.8 per cent of the diagnoses verified either by operation or an autopsy. In the Boston series there were 447 cases, 61 per cent of which were verified. Through secondary operation or autopsies an additional number of cases of the series will later be verified thus the author hopes ultimately to be able to certify the diagnosis in 74 to 80 per cent of the cases.

The 784 cases are again divided into (1) those with verified lesions of which there are 468, (2) those with indubitable brain tumors the nature of the lesions remaining uncertified even though they may have been seen at operation, 257 cases and (3) those with brain tumor syndromes which may or may not prove to be caused by new growths, tumor suspects, pseudo tumor and other conditions, 59 cases.

The clinical diagnosis of an acoustic tumor can be made with reasonable assurance only when auditory manifestations definitely precede the evidence of involvement of other structures in the cerebellopontile angle.

In 5 of the 30 cases of this series the inaugural symptoms were auditory.

A year or so after the acoustic symptoms first appear evidence of cerebellar incoordination becomes apparent and there is apt to be some soreness and stiffness in the neck on stooping and straining.

The cerebral nerves adjacent to the eighth begin to show signs of involvement in varying degree at variable periods. Next to the acoustic the nervus trigeminus is probably the first cerebral nerve of whose involvement the patient is conscious.

Twenty of the thirty patients of the author's series gave a history of double vision, sometimes transitory and sometimes persistent. In eleven of the cases there was an admission of objective weakness of the abductors on the side of the tumor. There was facial weakness in 19 of the 30 cases.

The glossopharyngeal, vagus, spinal accessory and hypoglossal nerves do not seem to play other than in exceptional cases an important symptomatic rôle in these acoustic tumors. There is however one important group of symptoms relating to the act of swallowing and phonation which is always a warning of an advanced process and indicates special hazard in undertaking an operation. Respiratory failure particularly during the admin-

both sides and carried to the limits of the field of the proposed operation. The skin of the periosteum is elevated from the nasomaxillary junction on one side to the corresponding point on the other side. The hump is then removed with a saw or rasp and the edge beveled so that the nose will not appear too broad on the dorsum after the hump has been removed.

Long nose is corrected by first making an incision at the mucocutaneous margin on both sides of the septum then cutting off the end of the triangular cartilage and then a strip of the mucous membrane or the entire triangular cartilage may be exposed by submucous elevation and a wedge-shaped piece of cartilage removed. Next an incision is made anterior to the lateral cartilage and the skin and periosteum completely elevated over the entire nose. The incision in the septum are then sutured and covered with a narrow strip of gauze soaked in tincture of benzoin compound.

It also seems wise to carefully open the preauricular area as well as the bridge of the nose with iodine solution. No suture is necessary. The incision anterior to the lateral cartilage. Adhesive plaster is very carefully applied over the bridge of the nose from cheek to cheek and around the nostrils. The nose from the nasomaxillary junction on both sides. No intranasal packing is necessary.

Drop nose may be due to an overdevelopment of the triangular cartilage or it may be traumatic in origin. In the former the procedure used in the correction of long nose is to be followed. In the traumatic type a pocket is detected in the membranous septum and an incision of the cartilage from the septum with a needle with a small circular incision is made.

In the correct procedure the nostrils are elevated and a nasomaxillary suture line exposed. This is cut through with a saw or Lohr slot forceps. The attachment of the nasal to the frontal bone is cut with a fine chisel or bone key with a mallet. The nose is carefully strapped to hold it in position.

Principles of the treatment of a condition frequently associated with dislocated columnar cartilage and deformation of the septum. It is corrected by removing an elliptical piece of the mucous membrane then carefully exposing the lateral cartilage and removing about one-eighth of an inch of the cartilage. Two or three silk sutures are introduced and the line of incision covered with gauze soaked in collodion or tincture of benzoin compound.

Procedure for the correction of cutting an ellipse of skin from the back of the ear and the neighboring mastoid with the superficial fascia care being taken to expose the periosteum and perichondrium which are stitched together with chromic catgut. The skin closed with silk worm gut or horsehair. Should it be necessary to remove a portion of the cartilage in the region of the antihelix a second ellipse is cut, the cartilage exposed and a piece most carefully dissected from the anterior skin surface.

The author emphasizes the importance of absolute asepsis in the performance of these operations. He presents case reports illustrating the different types of operation and photographs showing the condition before and after operation.

G. W. HOCHEM

Payne R. L. Jr. Cranial Decompression for Head Injuries Accompanied by Signs of Increased Intracranial Pressure. *Surg. Gynec. & Obst.* 1913, 345.

The author reports 29 consecutive cases of severe head injuries accompanied by marked increase in pressure in which subtemporal decompression was done in every case. The mortality was 75.86 per cent of these cases recovered while 24.14 per cent died. In the last 7 successive cases chosen for operation there was only one death following decompression.

Head injuries are divided into two types: mild and severe. The mild cases recover without developing high increase of intracranial pressure. It is only in the severe type of head injuries accompanied by a marked increase of pressure that decompression should be considered.

The indications for decompression in these severe head injuries depend on the signs found from study of the pulse rate, the eye ground, the spinal pressure and the systemic blood pressure.

With reference to contra-indications for operation the author has never seen a case of acute high intracranial pressure where a pulse of 45 to 50 recovered by operation if the case was left unoperated until the pulse on the secondary rise had reached 95.

Results will be much better in these cases if with proper indications present the threatened danger to the medulla and the rest of the brain is relieved by a cranial decompression.

De Martel J. Cranial Surgery Under Local Anesthesia. *Lancet* 1913, 364.

In 1913 De Martel had the idea of attempting cranial operations under local anesthesia especially trepanation in the cerebellar area. His first attempt made in the year for a large cerebellar tumor was eminently successful. Numerous similar operations were done throughout 1913 and the first part of 1914.

Since 1913 De Martel operated under local anesthesia for pontocerebellar tumors. In 2 of these cases exploration showed that the tumors were inoperable. In the 4 other cases the operation was carried out without difficulty and quite successfully but 3 died subsequently from postoperative complications.

Since the outbreak of the war De Martel has noted that Harvey Cushing has adopted the method and has obtained all the results that the author claimed. Until recently Cushing was a firm advocate of general anesthesia in cerebral surgery.

De Martel makes a number of subcutaneous

In their own technique the authors prefer ether or local novocaine adrenalin anesthesia to chloroform on account of the latter's affinity for the lipoids of the brain. They make a three pointed star incision and carefully excise all contused tissues. Bone and fragments are extracted by forceps or a curette under control of the finger. The area is then washed with warm serum.

The authors think that the extraction of projectiles is always desirable and have found it more and more possible by working under intermittent radio-copic screen control. Extraction should be primary before infection sets in. Secondary extraction has never given other than mediocre results.

The authors do not think that the cerebral lesion ought to be drained. It is best to place a slit dressing in such a way as to preserve the statics of the brain. By the aid of superimposed compresses the meningeal breach can be kept closed and hernia prevented. Such precautions are however not always successful. The authors had cases of meningitis and 6 cases of hernia in their 34 operated cases, 3 of the latter being fatal.

Closure is generally effected in about three weeks.

The authors' actual results show that of 34 operated patients 31 died or 61 per cent. The survivors have been followed for periods varying from a few months to two years. In many cases therefore these recoveries would seem to be permanent.

Although the mortality is high it is to be noted that 96 per cent of the case as they came were operated upon, 9 of them being in a state of full coma from which they did not recover. If these cases of coma be subtracted the mortality is only 49 per cent.

In cases of primary extraction of deeply embedded projectiles the authors had 35 per cent recoveries which proves the value of their technique.

With regard to the site of injury wounds anterior to the aunculo-bregmatic plane had a mortality of only 35 per cent against 67 for those behind this plane. Wounds simultaneously involving both planes have given 93 per cent mortality. Cerebellar wounds gave 100 per cent mortality.

As regards the time of operation those operated upon within twelve hours of injury had a mortality of 50 per cent, those operated upon within thirteen to forty-eight hours 41 per cent, and those operated upon after forty-eight hours 87 per cent.

W. A. BRENNAN

Adson A. W. Hypophyseal Tumors Through the Intradural Approach. *J. Am. M. Ass.* 918:1, 11.

In two of the group of six cases the patients presented very definite bitemporal hemianopsia with more or less complete loss of vision in the left eye. One patient had a complete loss of vision in the right eye for a period of ten years, and a left temporal hemianopsia, one presented a typical acromegalic syndrome with a temporal color hemianopsia and constricted object field, one had bitem-

poral hemianopsia with more or less distorted fields in the left eye and one had blindness in the right eye with definite neighborhood symptoms producing a frontal lobe syndrome of pressure and localization involving the uncinate gyrus.

Postoperative convalescence was uneventful and rapid in all but one case in which the patient died on the second day. In two cases there was complete restoration of vision in two marked improvement in vision and in one a relief from headache. In the case of blindness in the right eye which was complete for ten years the patient has begun to have a return of vision. The patient with acromegaly is having metabolic changes. In five cases there has been definite improvement. In one no visual improvement but relief from pain was obtained.

The particular advantages of the operation are: 1. Its approach presents a dry field free from infection and in which it is comparatively easy to expose the optic commissure and the tumor.

2. The exposure permits the dissection of the tumor from the optic nerves and the commissure and the removal of all or any portion of the tumor and pituitary body that is desired.

3. Trauma of the commissure and nerves is prevented as the sponging is done against the floor of the sella instead of working upward against the commissure and nerve peduncles.

So far as the operative risk is concerned it is no greater than in craniotomies on the frontal lobe depending a great deal no doubt on the experience of the operator.

EDWARD L. CORNELL

NECK

Boggs R. H. Tuberculous Adenitis and Its Treatment by Roentgenotherapy. *Am. J. Roent. Gen.* 918:1, 425.

Boggs states that end results in the treatment of tuberculous adenitis by roentgenotherapy are superior to those produced by any other method because radiation is a local as well as a constitutional treatment. More cases are permanently cured by this method than by surgery alone. Roentgenotherapy never spreads the tuberculous process, leaves no deformity and the patient always gains in weight and general health during treatment.

Surgical treatment of tuberculous glands is not justified before roentgenotherapy, nor after it except in a small percentage of cases. There has been too great failure in the reporting of cases and most of the failures seen by surgeons are cases in which the roentgen treatment was unfinished or inefficient. There is a small percentage of cases where it is advisable to remove fibrous nodules after radiation. These nodules are frequently mistaken for a failure in treatment but if removed and examined they are found to contain only the fibrous stroma of the gland.

Cervical gland occasionally undergo a calcareous degeneration following radiation that leaves the glands so dense that a roentgenogram discloses

Janney N W Studies in Thyroid Therapy the Effects of the Thyroid Hormone as Determined by a Clinical Metabolic and Dietetic Investigation *Arch Int Med* 915 xxi 87

Of all attempts at organotherapy the most brilliant results have been obtained with thyroid preparations. This fact lends especial interest to the active substance of the thyroid as well as its employment in the treatment of disease. Some time ago a crystalline body containing over 60 per cent of iodine was prepared from the thyroid by Kendall of the Mayo Clinic. Observations made on cretins and myxedema patients justify the view that this substance is to be regarded as a hormone having the functions ascribed to the thyroid.

The present article describes therapeutic experiments with this thyroid preparation on the effect of thyroid administration on metabolism and on diet in thyroid disease. In view of the importance of a thorough study of the thyroid hormone it was decided to follow its action with the aid of (1) concomitant metabolic investigations (2) strict control of the dietary regime by specially analyzed and weighed diets (3) prolonged periods of observation varying from three to thirty seven weeks (4) parallel observations of the effect of other thyroid preparations and (5) a series of normal control cases.

On account of the unusual amount of special food preparation special nursing and analytic work required only a limited number of cases could be included. All deductions made in this article are therefore subject to this criticism. It is however believed that less material thoroughly studied is of greater value than a large number of cases which have been merely subjected to the usual clinical methods of control.

In order to establish a definite gauge of the activity of the thyroid preparations given it was determined to follow the effects on the protein metabolism over continued periods with estimation of the nitrogen intake output and balance. It was found that the nitrogen balance is a rather delicate

measure of the action of the hormone. The results are of unusual interest for they very definitely indicate that a gain not a loss of nitrogen is a result of the therapeutic action of the thyroid and vice versa that a loss of nitrogen that is protein is due to a toxic condition of the gland.

The thyroid hormone was found to have a definite therapeutic effect in cretinism improvement in the clinical symptoms and a gain in nitrogen retention resulting. The optimal daily dose was found to be 0.25 mg hormone iodine representing approximately 0.75 mg hormone and corresponding to four grains of thyroid tablets. It could thus be demonstrated that usually too great an amount of thyroid is prescribed in hypothyroidism. The use of the thyroid hormone in minimal doses that is 0.05 to 0.06 mg hormone iodine daily in Graves disease was followed by increased retention of nitrogen but by no certainly established therapeutic effect. The thyroid of obesity depends on a toxic effect as it is accompanied by nitrogen loss. It should therefore be discouraged.

The effect of diet in thyroid disease was also critically reviewed and investigated. In cretinism as in normal individuals an evenly balanced protein fat and carbohydrate diet was followed by the best results. In exophthalmic goiter as has been previously observed very greatly increased amounts of food are necessary in order to combat the toxic combustion. A high caloric mixed diet was found to be the diet of choice in this condition. The relation of diet to the therapeutic action of thyroid preparations was also investigated.

From this and other studies of the thyroid problem certain changes in the point of view toward thyroid function in thyroid diseases are developed and included in the general discussion. They comprise (1) the conception of the anabolic and therapeutic action in contrast to the catabolic or toxic action of the gland or its preparation (2) a discussion of metabolism in hypothyroidism (3) the hormone hypothesis of the pathogenesis of exophthalmic goiter. GEORGE E. BEILBY

SURGERY OF THE CHEST

CHEST WALL AND BREAST

on J H Cancer of the Breast *Ohio St W J* 19 8 xiv 524

Statistics show that the mortality from malignant disease of the breast constitutes about 10 per cent of all deaths from cancer in women. It seems certain that benign tumors and inflammations are important etiological factors in breast cancer. Radical surgical treatment gives such patients the only chance of cure. It is important to go even a step farther and remove the condition in its precancerous stage such as benign tumors, cysts and inflammations. The early diagnosis is therefore of supreme

importance. The author believes the classification of carcinomata brought out by Dever is the best thus far.

This classification is (1) scirrhous or hard cancer (2) medullary or soft cancer (3) carcinoma simplex (4) adenocarcinoma (5) gelatinous carcinoma (6) squamous carcinoma.

From the standpoint of any early diagnosis before there is lymphatic involvement the first two varieties are of clinical importance. The early diagnosis then rests upon the differentiation between benign tumors such as adenomata, fibromata, cysts, mastitis and scirrhous or medullary cancer. In recent years there seems to be a diminution in

shadow similar to those seen in the chest following nature's cure of a tuberculous process. Roentgen cures the glands in the same manner as nature and more quickly. A sclerosis of the glands with entire obliteration of all adenoid tissue can be produced in every case if the treatment is properly given.

Large glands due to an inflammatory process are frequently secondarily to a septic condition elsewhere and a sear ch should be made for the primary focus. If after this is found and treated the gland remains large and particularly if they have a tendency to suppurate roentgenotherapy should be employed at once given promptly and properly suppuration can nearly always be avoided. There is no better treatment than roentgenotherapy for carbuncles, boils and other localized pus infections. There should be no haste to open a tuberculous abscess. Under roentgen treatment they are never painful.

Susceptibility to the development of tuberculosis is always greatly lessened after a few operations and the patient enters in some cases at least a remission of immunity.

Constitutional infection not uncommon when tuberculous glands are neglected. Therefore a patient with chronic enlarged glands in the neck should have treatment before the constitutional symptoms develop.

By roentgen the local disease can be removed and the removal of the hyperaemia prevents an extension of the disease. The healing of the process or local lesions is far less important than preventing the spread to a generalized tuberculosis.

D. R. BOYD

Darling H. C. R. T. Surgical Importance of the Interscapular Gland. *Id J S 1 1 1 9 8*

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The author believes that an early superficial cancer of the tongue if properly treated should be and is curable in practically every case although operative results have shown recurrence to be the rule at the end of three years in about 80 per cent of cases most frequently recurring in the lymphatic tissue of the neck.

To improve these results either the public must be educated to consult medical men early when a superficial lesion occurs or the surgeon must enlarge his knowledge of the anatomy and physiology of the lymphatic system of the neck to enable him to treat a decided case more efficiently.

In epithelioma of the tongue since the surgeon is able to prevent in any given case if the lymphatic extension has taken a certain course toward a certain gland group and to guard that group only he believes that all operations for this condition should invariably include removal of the regional lymphatic area. The measure should apply in the removal of one of the glands of the lymphatic area by carcinoma, namely removal of all group primarily connected with the affected gland. In the early stage it can be removed with practical certainty of cure. The deeper infiltration increases the difficulty of obtaining this result.

The author points out that if the involved gland remains hard and well defined even though numerous there is still the hopeful probability of a cure produced a thorough operation performed if however the glands although not necessarily large or numerous are ill defined giving an inflammatory rather than a carcinomatous impression then he regards the chances of cure by operation however large as remote. A dozen hard sharply defined epitheliomatous glands are less serious than a single one of which the outline is obscure. He thinks that the prognosis of buccal carcinoma therefore should in general be based on physical signs rather than upon the duration of the disease.

He believes that operative procedure should not be entirely a question of anatomy but should be influenced by the clinical consideration that the patient may not be submitted to more serious operative treatment than is absolutely necessary.

H. J. VAN DER BEEK

Mayo C. H. The Principles of Thyroid Surgery. *J Am M 1 5 9 8 1 7 10*

According to the author the thyroid should be considered one of the most important glands of the body no other gland has been so well cared for in its circulation as the thyroid all of the blood in the body passing through it once in a hour.

The work of Plummer and Kendall investigating the physiologic action of the thyroid secretion is highly commended.

Baumann in 1895 found iodine to be associated with the thyroid secretion and Kendall in 1915 separated as a pure crystalline substance the organic compound which contains the iodine which is called thyroxine. Its function involves in the most fundamental processes of life that is the production of energy. Plummer has shown that the rate at which energy is produced is controlled by the amount of thyroxine which is acting within the cells of the body. While not the only factor influencing the rate at which we live it probably has more to do than any other substance in the governing of the speed at which energy is produced in the body. Plummer shows the average basal metabolic rate of exophthalmic goiter patients at the time of coming under observation to be 57 per cent above normal and the average rate in those whom I gatons were denied and who returned in three months to be plus 39 per cent. The average rate eighteen days after thyroidectomy is plus 19. I gatons probably causes the metabolic rate to drop approximately 5 per cent. The basal metabolic rate of normal persons does not fluctuate more than 10 per cent above or below the normal. The total amount of thyroxine in the tissues of the body of normal persons is in all probability approximately 13 mg. The increase of 0.033 mg of the thyroxine in the tissue of the body increases the rate of energy output 1 per cent.

L. H. LAVER

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CRORR L. BILBY

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Johnson J H Cancer of the Breast Ohio St W J 1918 xiv 24

Statistics show that the mortality from malignant disease of the breast constitutes about 10 per cent of deaths from cancer in women. It seems plain that benign tumors and inflammations are important etiological factors in breast cancer. Prolonged surgical treatment gives such patients the only hope of cure. It is important to go even a step farther and remove the condition in its precancerous stage such as benign tumors, cysts and inflammations. The early diagnosis is therefore of supreme

importance. The author believes the classification of carcinomata brought out by Deaver the best thus far.

This classification is (1) scirrhus or hard cancer (2) medullary or soft cancer (3) carcinoma simplex (4) adenocarcinoma (5) gelatinous carcinoma (6) squamous carcinoma.

From the standpoint of any early diagnosis there is lymphatic involvement the first two varieties are of clinical importance. The early diagnosis then rests upon the differentiation between benign tumors such as adenomata, fibromata, cysts, mastitis and scirrhus or medullary cancer. In recent years there seems to be a diminution in

shadows similar to those seen in the chest following nature's cure of a tuberculous process. Radiation cures the glands in the same manner as nature and more quickly. A sclerosis of the gland with entire obliteration of all adenoid tissue can be produced in every case if the treatment is properly given.

Large glands due to an inflammatory process are frequently secondary to a septic condition of the neck and a search should be made for the primary focus. If after this is found and treated the glands remain large and particularly if they have a tendency to suppurate roentgenotherapy should be employed at once given promptly and properly suppuration can nearly always be avoided. The easier the better treatment than roentgenotherapy for a carbuncle, boil, and other localized purulent infection. There should be no haste to open a tuberculous abscess. Under roentgen treatment they are never painful.

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By radiation the local disease can be removed and the removal of the hypersusceptibility prevents an extension of the disease. The healing of the process locally is far less important than preventing the spread to a general tuberculosis.

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The author believes that in early suppurative cancer of the tongue if properly treated should be and is curable in practically every case. Although operative results have shown recurrence to be the rule at the end of three years in about 50 per cent of cases metastases frequently recurring in the lymphatic tissue of the neck.

To improve the results with the public must be educated to consult a medical man early. Whenever suspicious occurrences in the oropharynx must enlarge his knowledge of the anatomy and physiology of the lymphatic system of the neck to enable him to take advantage of a more efficacious treatment.

In epithelioma of the tongue since in situ geonectomy is the rule in any case that lymphatic extension has taken a certain course toward a certain gland group and that that group only he believes that all operations for this condition should invariably include removal of the regional lymphatic area. The same rule should apply to the treatment of one of the glands of the lymphatic arch by carcinoma, namely removal of the group primarily connected with the affected gland. In the early stage it can be removed and a practical certainty of cure while deeper infection increases the difficulty of obtaining this result.

The author points out that if the involved gland remains hard and well defined even though numerous there is still the hopeful probability of a cure provided a thorough operation is performed. If however the glands although not necessarily large or numerous are ill defined giving an inflammatory rather than a carcinomatous impression then he regards the chances of cure by operation however large as remote. Adenoid sharply defined epitheliomatous glands are less serious than a single one of which the outline is obscure. He thinks that the prognosis of buccal carcinoma therefore should in general be based on physical signs rather than upon the duration of the disease.

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L H L

developing an acute lymphatic leukemia recalls the views of Herz who lays stress upon the relation ship between the status thymico lymphaticus and lymphatic leukemia. In this case the suggestion is strong that the enlarged thymus was an indication of an abnormal lymphatic state predisposing to disease of the lymphatic apparatus which later manifested itself by the appearance of an acute lymphatic leukemia.

GEORGE F. BEILBY

TRACHEA AND LUNGS

Thomson St C. Tooth Impacted in a Secondary Bronchus of the Left Lung. Removal by Lower Bronchoscopy After Two Unsuccessful Attempts by Upper Bronchoscopy. *Trachitoner* Lond 1918 ci 61

A girl aged ten years awaking from nitrous oxide anesthesia inhaled a lower molar tooth. The child developed a wheezing respiration and cough. Rhonchi were heard on both sides but chiefly over the left lung. X-ray examination a month after accident revealed an opacity in the region of the root of the left lung.

Bronchoscopic examination under cocaine anesthesia revealed the tooth in an external branch of the left bronchus. The tooth was tightly impacted and the smooth conoid surface toward the operator so that forceps slipped and a hook insinuated between tooth and bronchus wall it fell became caught. The child showed no untoward results following this unsuccessful attempt at removal.

Eight days later a second attempt was made under loriciform anesthesia. There was much cough and is and the mucosa of the bronchus was swollen making operation more difficult than the first time. After forty minutes of anesthesia the patient collapsed and had to be restored by artificial respiration. There was however no shock or fever following but about a week later a lung abscess developed.

On the sixteenth day following the second bronchoscopy a third tracheotomic bronchoscopy was performed under chloroform anesthesia and the tooth removed with a Killian's bean forceps.

One or two tablespoonfuls of yellow pus welled into the bronchus on releasing the tooth. Complete recovery followed.

C. A. HEDBLUM

HEART AND VASCULAR SYSTEM

Perlstein I. Sarcoma of the Heart. *Int J M Sc* 1918 clvi 14

The first authentic report of a primary tumor of the heart was by Albers in 1835. The first sarcoma was reported by Bodenheimer in 1865. Since then about 100 cases of primary tumor of the heart have been reported but many of these reports must be rejected because the cases are not true tumors or are not primary in the heart. The most common tumors are fibromata, myxomata, fibromyxomata and sarcomata.

A clinical diagnosis of the condition has never been made. It does not produce a characteristic picture. Some die suddenly without having shown any signs of the disease. When present the symptoms depend upon the size and location of the tumors. The most rational diagnosis made has been cardiac disease of unknown origin.

The author's case was that of a business man of forty three years. There was a history of shortness of breath and cough of two weeks duration. Physical examination showed flatness and other signs of fluid at the left base. Thoracentesis revealed bloody fluid. The heart was pushed to the right two and one half inches. The sounds were normal.

The first day at the hospital thoracentesis yielded one quart of bloody fluid. After several later aspirations at frequent intervals a thin catheter was introduced for drainage. During his hospital sojourn the outstanding symptoms were dyspnea, profuse perspiration, restlessness, vomiting, dizziness, faintness, weakness, thirst and cough. He died about five weeks after the first onset of symptoms.

Autopsy showed subepicardial mixed cell sarcoma of the heart with metastasis into pericardial fat, pleura and mediastinal lymph glands. The primary tumor occupied the right border and the larger part of the posterior and diaphragmatic surfaces of the heart.

C. A. HEDBLUM

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

G. Penetrating Abdominal Wounds (Sulle ferite penetranti d'ili addome). *P l It Ioma* 918 v 5 clt 193

The author has observed 235 abdominal wounds treated in one of the Italian surgical ambulances. Short histories are given. There were 56 per cent of recoveries. In 87 non-operated patients there were 28.8 per cent recoveries. In 148 paratomized 41.3 per cent recoveries. Some of the non-operated cases were manifestly without

gastrointestinal intraperitoneal lesion. Subtracting these cases 61 remain and of these only 1 recovered. Of the operated cases 106 had perforating intraperitoneal gastrointestinal lesions. 38 of these or 35.8 per cent recovered.

Multiplicity of visceral lesions aggravates the prognosis. Wounds which require the sacrifice of the spleen or of a kidney are almost always fatal. If the rectal portion of the intestine is involved the prognosis is very bad. If injuries of this class are deducted among the remaining 76 cases operated upon the recoveries amount to 46 per cent.

the ratio of cancer as compared to benign breast tumors. This chance is explained because of the shorter duration of the lesion and the fact that women seek advice earlier. There is only one way for an early diagnosis and that is removal of the tumor for microscopic and macroscopic examination. The cancer must be diagnosed before the lymphatic glands of the axilla become involved as most patients are operated upon after the disease is too far advanced. I am most of all up to date because tumor must be detected in order to have the death rate from carcinoma.

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When a distal amputation is done including the removal of the distal radius and the ulna, it is important that the margins of the wound are in the appropriate anatomical plane. This necessitates a plane of dissection which, according to Tanaka, is obtained by using the musculotendinous dorsal wrist plane. He proposed and used Hevea's distal method of illustration.

The clavicular insertion and the biceps brachii muscle. The axillary artery runs along the inferior border of the pectoralis major muscle. The axillary vein runs along the medial border of the pectoralis major muscle. The axillary nerve runs along the surgical neck of the humerus. The axillary artery runs along the inferior border of the pectoralis major muscle. The axillary vein runs along the medial border of the pectoralis major muscle. The axillary nerve runs along the surgical neck of the humerus.

The author discussed the advantages of the plastic method.

Maj r R H A Tl ymu Tumo A c ted itl
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The relation between tumors of the thymus and leukemia remains subject of much interest to both clinician and pathologist. Interrelationship subject is perhaps heightened by the frequency of such cases since as Schröder has remarked: "With

the exception of the bone marrow the thymus is the organ in the body poorest in tumor. Because of this comparative rarity of thymus tumors and the association of some of them with leukemia the authors report the following case:

A white woman aged forty two entered the Kan as City General Hospital on January 1, 1918 complaining of pains in the neck. She stated that she had been weak and had had no appetite for a month. About two weeks before admission she had begun to have headaches and pains in the right thigh radiating from the hip down to the right ankle. She had also found vision in the right eye impaired and had complained that everything looked crossed. Some cough and shortness of breath had been present.

Physical examination showed a rather obese woman with a somewhat pasty color. The eyes reacted to light, the left pupil as slightly larger than the right. There was a complete paralysis of the sixth nerve in the right eye and partial paralysis on the left side. The teeth showed a marked pyorrheal alveolar condition to the sides of the hypopharynx. The chest showed a few moist rales, the axillæ normal. The lungs enlarged and palpable. Reflexes normal. Blood pressure was 185.

The spinal fluid examined on February 1 showed a cell count of 0. Nonne and Wassermann tests were negative.

White blood count on February 8 showed 3,400,000 red cells, 40% white cells, hemoglobin 60 per cent. Differential cell count showed polymorphonuclear neutrophils 1 per cent, small lymphocytes 35 per cent, large lymphocytes 3 per cent, transitional 8 per cent, eosinophils 2 per cent, myelocytes 4 per cent, degenerated form 2 per cent, no monoblasts per cent.

The blood examination on February 11 showed 36,000 red cells, 2 white cells, hemoglobin 6 per cent. Differential count showed polymorphonuclear neutrophils 6 per cent, small lymphocytes 7 per cent, large lymphocytes 35 per cent, eosinophiles 1 per cent, myelocytes 0 per cent, degenerated forms 1 per cent, no monoblasts 10 per cent.

The patient died on February 2, the day following the second blood examination. The findings of the blood examination were clearly those of a lymphatic leukaemia and the short duration of the disease with the rapid course indicated the diagnosis of acute lymphatic leukaemia.

[illegible]

This patient with a persistent enlarged thymus

Ide A W Local Anesthesia in Inguinal Hernia

J Lancet 1918 *xxxxviii* 534

Every surgeon sees hernia patients who are unwise risks for a general anesthetic and in these a local anesthetic is as a rule used. In the past two years a local anesthetic is the one of choice in an increasing number of the author's cases.

The technique used is summarized as follows. Forty five minutes before operation a one sixth grain of morphine is given. The preparation of the patient is the same as for a general anesthetic except that food is not withheld. The patient is made comfortable on the operating table by means of a heavy pad and pillows. A nurse attends to his wants.

A 1 per cent solution of novocaine is used in the skin and a 0.25 per cent in the deeper tissues. Four grains of novocaine will usually suffice but as much as twelve grains may be given with safety. No adrenalin is added because of the danger of sepsis. The tissues beneath the skin around the nerve trunks and the sac are injected as the operation proceeds.

The sharp scalpel is preferred to blunt gauze traction. The tissues are traumatized a little as possible and the wounds closed in any manner desired. P W SWIFT

GASTRO INTESTINAL TRACT

A F R Syphilis of the Stomach

I M J 1918 *cxviii* 544

In the gastro intestinal department of the Brooklyn Hospital Dispensary the author found that out of a total of 1,000 patients suffering from kinds of gastro intestinal symptoms 60 per cent had strongly positive Wassermann reaction. A routine serological examination was done on nearly the entire 1,000 cases. Of the 60 syphilitic cases 26 or 30 per cent had demonstrable lesions of the gastro intestinal tract having been diagnosed as gastric ulcer 6 having cervical or appendiceal fornicities and the others various other lesions such as hepatic pancreatic etc.

The 9 gastric ulcer cases with positive Wassermann reactions represented 15 per cent of the total number of gastric ulcer cases in the clinic, the 3 duodenal ulcers 3 per cent of all duodenal ulcers and the 6 cervical and appendiceal cases 1 per cent of all cases with these lesions. Five of the seventy cases had abscess dorsalis. The others apparently had merely reflex gastro intestinal symptoms. Of the total 70 cases the author reports but one as a definite demonstrable case of syphilis of the stomach.

The case is one of a man forty years old whose radiographs showed a large dilated stomach with pyloric stenosis and the finger marks supposed to be characteristic of gastric carcinoma. The stools contained occult blood, the blood Wassermann reaction was four plus. A dose of 0.6 gm of salvarsan was given on February 3. The patient grew steadily worse.

rectal feedings were not retained and with a threatening toxidosis it was deemed advisable to relieve the pyloric stenosis which might possibly be malignant by operation. On February 27 the abdomen was opened and a hard indurated mass the size of a lemon and typically malignant was found at the pylorus adherent behind causing a complete stenosis. A posterior suture gastrojejunostomy was done with the intention of doing a resection later at a secondary operation. Two weeks later radiographs showed the stomach much smaller and the gastro enterostomy working nicely but the mass was apparently still present at the pylorus.

On March 2 about three weeks after the first operation and one month after the dose of salvarsan the abdomen was again opened but no sign of the mass was found, the pylorus being apparently free since that time the patient has been kept steadily under vigorous antisyphilitic treatment and has had no more gastro intestinal symptoms. His weight has gone from 139 pounds on discharge from the hospital after his second operation to 156 pounds at the present time. His Wassermann reaction at present is four plus. Radiographs show the gastro enterostomy still functioning and the pylorus apparently closed. There is a defect on the upper surface of the pylorus probably due to cicatricial contraction. EDWARD L CORVELL

Frank L Observations on the Diagnosis and Treatment of Gastric and Duodenal Ulcers

Im J Surg 1918 *xxvii* 224

In the author's paper gastric and duodenal ulcers are discussed together as from clinical diagnostic and therapeutic viewpoints. He thinks there seems no good reason for separate consideration. Ulcers are the most frequent gastric and duodenal lesions which the surgeon is called upon to treat.

The diagnosis of gastric and duodenal ulcer is by no means always easy of accomplishment and errors are not impossible even after resort to all the available laboratory methods including roentgenographic and fluoroscopic findings.

Frank does not underestimate the importance of laboratory diagnostic aids when manipulated by competent workers but in the hands of the inexperienced he believes the findings are misleading and therefore worse than useless as a basis for therapeutic indication. He thinks the clinical history still remains the most reliable guide.

The treatment of developed gastric or duodenal ulcer is pre eminently and distinctly surgical and is indicated as soon as the diagnosis seems assured.

As to the proper method of surgical procedure there has been much debate and the question has not as yet been definitely settled. It is fairly well agreed however that gastro enterostomy is the simplest and safest method of surgical treatment. It affects both the drainage and chemistry of the stomach diminishing the acidity by the presence of a small quantity of regurgitated bile and pancre

The author is persuaded that intervention is necessary in all wounds with gastrointestinal lesions except where definite contraindications exist but in the case of wounds of parenchymatous organs intervention is indicated only when there is considerable hemorrhage.

As a general rule wounds through the abdomen from one side to the other require a closed and produce multiple intestinal injuries. Wounds crossing the pelvis are the most serious. The intervention is indicated in injury and operation is very portable.

The prognosis depends on a great many factors: (a) the nature of the projectile; (b) diffusion of intestinal contents into the peritoneum; (c) degree of hemorrhage; (d) multiplicity and gravity of the lesions. There is almost always more or less diffuse peritonitis but the cases in which there is abundant exudate especially rich in fibrin are less to be feared than those in which the exudate is slight and the peritoneum looks normal and lacking in its normal luster.

With regard to the percentage and the results in 100 injuries of the stomach, 14 recovered in 43 injuries of the small intestine, 18 recovered, 4 injuries of the large intestine recovered in 29 combined injuries recovered.

The conclusion is that the exploratory operation should be chosen so as to permit the surgeon to follow the viscera exposed through the path of the projectile. A median or paramedian incision for high wounds according to the case is best adapted to the various circumstances of the abdominal wound from the back.

An oblique or rarefied laparotomy should be adapted to the wound of the iliac fossa and of the flank.

It is difficult to explore the colon because of its peculiar fixation to the abdominal wall. A high paracostal incision enables the surgeon to follow the colon and its branches in the peritoneal reflection of the kidneys which will then be indicated in the course of laparotomy.

Abdominal exploration may also be effected by the lumbar route when the hemorrhage is indicated for a flank wound.

The transpleural diaphragmatic cut has been utilized when a projectile entering the thorax involves the spleen and lacerates the hypochondrium.

Exploration of the thorax in the path of the projectile should be thorough and complete. It should include the entire surface of the organ for examination. On account of the traumatizing effect of the wound, it should be done partly by a single loop of netting, the general condition returned to place before a second is taken out.

In wounds of the viscera the necessity for resection is rare. In the author's 60 operated cases only 8 resections were necessary, 7 of the small and 1 of the large intestine. The cases of extensive multiple lesions. Intestinal suture is generally in two continuous planes or a third may be added when the surface is covered by a omentum or epiploic strip.

Intrapertoneal bladder injuries have been sutured in places. Extraperitoneal injuries have been treated by simple drainage. Liver wounds have not been operated upon unless the hemorrhage is severe. Spleen and kidney injuries of such an extent that suture cannot repair them call for sacrifice of the organ.

Systematic peritoneal drainage has appeared to be of doubtful efficacy and has only been done when the flow of intestinal contents is very copious.

The mortality of the deaths were due either to shock or to peritonitis already established at the time of operation or to concomitant thoracic or limb wounds. In 2 cases death was due to projectiles which had escaped detection in the abdominal exploration.

The author is discussing the indications for peritoneal exploration points out that while in some patients the additional risk to life is small it may be fatal. The case of those whose general conditions exclude the addition of the smallest further trauma. Such patients having already suffered much from lesions of the liver, kidneys, etc. receive from an abdominal exploration a trauma which aggravates their condition and from which they cannot hope to recover.

The author discusses many other aspects of abdominal wounds. W. A. B. MAN.

Huggins R. R. The Use of Dakin's Solution in Suppurative Conditions Within the Peritoneal Cavity. J. Obst. & G. 98:1, 43.

The use of Dakin's solution in suppurative conditions within the peritoneal cavity began almost 60 years ago. It has been applied principally in suppurative appendicitis and in the extensive infections of tubal origin with prolonged convalescence.

There is an improvement in the general condition of the patient almost immediately. The much more marked than ordinary cases treated by drainage. The pain and soreness in the region of the wound quickly disappear, appetite soon returns, the color improves and the temperature rapidly returns to normal. For this reason there is less danger of co-dysinfection. The factors of healing are justified by additional doubt incident to its use.

When Dakin's solution is brought in proper contact with the infected surface it destroys pus. If this does not happen it is because there is some focus not reached by the solution or because of imperfect technique. As a result of its use the rapid return of strength and the postoperative course is more comfortable with less danger of secondary complications.

Any offensive foul smelling discharge is destroyed almost immediately. It is contraindicated in the presence of an intestinal fistula. That it may delay the final healing by interfering with the normal granulation process in some instances may be true, though further observation is necessary to determine this point. E. ARD L. CORNE L.

struction of the duodenum or the first portion of the jejunum in which death occurs rapidly as compared with those where the obstruction is low down

I. B. FRUICH

Ansprich B. M. Enterostomy and Interocolostomy in the Treatment of Acute Intestinal Obstruction Following Pelvic Operations. J. 111 M. 133 1918 lxvi 8

The measures of prevention recommended are most careful aseptic technique avoidance of intestinal trauma very circumpect selection and handling of drains and avoidance of cathartic after operation until peristalsis temperature and pulse are normal

It is quite likely that if every case of intestinal obstruction were immediately recognized and operated upon at once a very large proportion of patients would recover. However the diagnosis during the early postoperative convalescence is by no means easy for in the incipient stage obstruction may be simulated by other comparatively harmless condition such as tympanitic meteorism exaggerated ether nausea etc and for this reason postoperative obstruction is frequently complicated with a spreading peritonitis and toxemia by the time the condition is unmistakable in an operation undertaken for its relief

Enterocolostomy has a distinct place in the array of acute intestinal obstruction following pelvic operations and especially when the condition advanced and complicated with pelvic peritonitis

Five cases are reported I. EDWARD L. COLEMAN

Ann. II. and Binet. I. Pseudomyxoma of Appendicular Origin (La tuse lo-myx ma l' origine appendiculaire) Ann. d. gynec. et d. t. Par. 1918 lxvii 65

Gelatinous peritoneal tumors have been known a very long time. Every surgeon who has a large abdominal practice has met them following the rupture of ovarian cysts. In a few of the reported cases of peritoneal pseudomyxoma following an ovarian rupture the curious fact was noted that at the same time there existed a cystic appendix with gelatinous contents. The authors have operated upon such a case which they report. They have searched the literature to find the connection between the two conditions to discover whether the appendicular tumor was secondary to the ovarian neoplasm or otherwise. They have collected cases reported in the literature to which they add other cases. Short histories of all are given.

The study of the cases shows that there is almost always a perforation of the appendix. In only a few cases was it specifically stated that the appendix was not perforated, but the authors think that these cases had perforations secondarily obliterated. In all cases communication between the appendix and the cecal cavity was shut off. The orifice corresponding to Gerlach's valve had been obliterated.

The gelatinous masses may be free in the peritoneum but they are more usually encysted either in one or in a series of pockets.

The clinical history is almost always that of an appendicitis with crisis. The tumor has rarely been suspected until found at operation. The authors think that it is impossible to make a clinical diagnosis of these pseudomyxomatous masses of appendicular origin.

The prognosis of peritoneal pseudomyxoma of appendicular origin is conceded by all authors to be very much better than that of peritoneal pseudomyxoma of ovarian origin. The latter gives rise to peritoneal involvement after the rupture of an ovarian cyst. The fluid emanating from the perforated cystic appendix does not contain neoplastic cells and there is only a peritoneal accumulation of mucus normally secreted by the appendix. Histologic examination made in two of the authors' cases have verified this. The only difference from the normal secretion is that the peritoneal collection is coagulated.

With regard to treatment, simple evacuation of the gelatinous mass was followed by recovery in 3 cases; in 11 cases this evacuation was coupled with removal of the appendix; there was 1 death in 3 cases; the operator believed the condition to be neoplastic and removed the encysted mass and the ileocecal region *en bloc*; these 3 cases recovered.

The point established by the authors is that a chronic inflammatory condition of the appendix may occasion the production of gelatinous collections within the peritoneum. W. A. BRENNAN

Evans J. S. Epidemiology of Acute Appendicitis in Relation to Acute Nasal and Tonsillar Infections. Wisc. Med. J. 1918 lxvii 91

This is an analysis of cases of acute appendicitis from the standpoint of etiology occurring at the University of Wisconsin over a period of 50 months. Postnow demonstrated the fact that the streptococcus group has an elective affinity for certain tissues. He was able to produce appendicitis in 68 per cent of animals inoculated with cultures of streptococcus isolated from cases of appendicitis while only 5 per cent of the animals were so infected by culture of streptococci isolated from widely varying sources. The figures dealt with below tend to prove that acute appendicitis is an acute metastatic focal infection in many instances.

From February 1910 to June 1916 inclusive there were 36 cases of acute appendicitis in over 16,000 students at the University, an average of four cases per month. The analysis of these cases from the standpoint of the frequency of a primary focus of infection preceding the onset of the appendiceal symptoms is as follows: of the 236 cases 214 or 91 per cent were primary attacks, 22 or 9 per cent were recurrent. Of the 14 cases in 183 or 86 per cent there were definite primary infections of the upper respiratory tract. There was no such evidence in 31 or 14 per cent. The respiratory

LIVER PANCREAS AND SPLEEN

Mitchell L. J. The Incidence of Calculi in the Gall Bladder as Met with in 1 600 Necropsies
Ann Surg Phila 1918 LVIII 260

The author gives a summary of necropsy statistics derived from service as coroner's physician from individuals dying suddenly either from violence or disease.

In the 1 600 necropsies calculi were found in 50 cadavers. In addition on one occasion a stone was found in the common duct with the gall bladder obliterated and on another one in the cystic duct. The gall bladder was opened in every instance.

In this series there were 1315 males and 55 females and the number with calculi was 28 and 22 respectively. The youngest subject with calculi was twenty five the oldest eighty four years.

The author quotes Mosher from a series of 16 necropsies gall stones were present in 55 per cent of the whites and 55 per cent of the negroes. Clark from experience in the Canal Zone concludes the West Indian negro is more liable to calculi than the same race in temperate climate. In fifteen years Rodman never saw a case in Louisville Kentucky and only one in ten years at Philadelphia.

Hirsch asserts that biliary concretions are decidedly less common in lower than in higher latitudes. At Calcutta Rogers believes biliary calculi are actually more common than in some European climates. Mohammedans are highly less liable than Hindus and Europeans considerably.

So in Egypt they are rather more common in Europeans and Turks than in natives and negroes. As regards China while urinary calculi are excessively abundant Jeffreys and Maxwell record but a single case (Shanghai) though they received reports from practically all parts of the country. They observe that middle China about Canton escaped. In 13 instances single stones were found in 7 more than one from 2 or 3 to 632.

In no instance was the cholelithiasis the direct cause of death.

THEO DROBOWITZ

resno y Bastiony I. A. End Results of Gall Bladder Operations (Resultado lejano de las intervenciones sobre la via biliar). *Rev Med y Ciruj Habana* 1918 LVIII 439

The author did 67 cholecystectomies. About 18 of these patients have been followed for five years more. In none of the patients followed have any

disturbances been observed which could be referred to extirpation of the gall bladder. The author after reviewing the various theories of the function of the gall bladder while not recommending its systematic removal as a useless organ thinks

it is not vitally important and that its function is a regulator of the equilibrium of pressure in the interior of the bile passages is taken up and supplied after its removal by the compensatory dilatation of the bile ducts.

In his series of cases the author had to re operate

upon two patients for recurrence of the lithiasis. These were true recurrences and not the pseudo recurrence of Kehr.

W. A. BRENNAN

Archibald F. Effect of Prolonged Bile Drainage in the Cure of Subacute and Chronic Pancreatitis. *J Am Med Ass* 1918 LXXI 98

While it is perhaps not quite justifiable to draw far reaching conclusions on the basis of 33 cases in view of the lack of that exact knowledge which only a second laparotomy can furnish the author thinks nevertheless that the results recorded are at least suggestive.

The general fact stands out clearly that the shorter the drainage of bile the more persistent were symptoms similar to those complained of before operation and that when the drainage was prolonged for four weeks or more all such patients were cured permanently. Whether or not gall stones were present did not appear to make much difference.

EDWARD L. CORVELL

MISCELLANEOUS

Deaver J. B. The Traumatic Abdomen. *Ann Surg Phila* 1918 LVIII 75

Deaver believes that in the diagnosis of a suspected traumatic abdominal lesion pain is of little aid. It varies in degree and there is apparently no direct relationship between its intensity and the extent of the injury. Pulse and the degree of abdominal rigidity are of importance. A man with a pulse of more than 110 is not usually able to withstand prolonged anesthesia and requires suitable treatment before operation is undertaken. Hemorrhage should always be suspected and then it is the state of the pulse that is often the deciding factor for or against intervention.

Abdominal rigidity varies from generalized rigidity over the entire abdomen to a small localized area. The latter often occurs in late cases where a lateral wound has involved only the colon and a fecal fistula or walled off abscess has formed. The absence of rigidity is an unfavorable prognostic sign since it is usually associated with extensive lacerating lesions of the small and sometimes the large intestine and usually is seen in cases that come under observation from ten to twelve hours after being wounded.

Vomiting though it forms part of the history of nearly every case of abdominal injury is not a constant feature. In fact it is often a prominent symptom where there is no visceral lesion. The same inconstancy characterizes hæmatemesi and melæna when present they are valuable diagnostic signs but their absence does not necessarily indicate the absence of perforation of a viscus.

Nor is the site of the wound an unfailing indication as to the involvement of the abdominal cavity. A foreign body may enter almost any region of the body and traverse or lodge in the abdomen. The records of the present war injuries of the ab

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In this series there were 131 males and 285 females and the number with calculi was 8 and 2 respectively The youngest subject with calculi was twenty five the oldest eighty four years

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the transverse colon this opening, being more easily controlled and cleansed facilitates subsequent restoration and closing of the bowel. At the event of secondary operation for the repair of the rectum the pelvic colon can be mobilized and brought down to the injured part.

Bladder wounds are fortunately rare for their mortality is very high. Extraperitoneal injury indicated usually by hemorrhage into the bladder may be treated by catheterization or by perineal section. Intraperitoneal injury however the more serious of the two demands immediate operation.

Of the solid viscera the liver is the most frequently involved and is at the same time the viscus which most often recovers without operation. Op-

eration is indicated where there is evidence of profuse hemorrhage and generally consists of inspection, plugging and drainage.

Wounds of the spleen *per se* usually require splenectomy. They generally occur as complications of other lesions. This is also true in the rare instances of wounds of the pancreas. The prognosis of pancreatic injury is bad. Hemorrhage is generally very severe and treatment is mainly directed to controlling hemorrhage by suture or gauze packing and lumbar incision.

Postoperative treatment of the traumatic abdomen does not essentially differ from the regimen in use for other abdominal operations. In Deaver's opinion

F. C. ROBERTS

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES TENDONS CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Davidson A. J. A Case of Congenital Deformity of the Hands Supernumerary Toes and Absence of Tibiæ. *Im J. R. N. S. 1915* 434

The case is reported of a male child the sixth of seven children. His four sisters and two brothers are of normal development and there is no family history of malformation. There are five well formed fingers on each hand all of about equal length with a metacarpal bone for each. The child uses each hand well and apparently does not miss the absent thumb action. On each foot there are eight fairly well formed toes with six equally developed metatarsals on the right side five and a rudimentary one on the left.

The upper leg hip and thigh are normal. The lower legs are very short. There is complete absence of each tibia. The fibula is present but its articulation is faulty at both ends. It articulates neither with the femur nor the astragalus. On both sides there is a distal epiphysis. There is no stability to the lower legs. The child walks with difficulty by inverting the feet and bearing the weight on the outer side of the lower leg. D. R. BOWEN

Kummer E. Dyschondroplasia or Ollier's Disease (La dyschondroplasie ou maladie d'Ollier). *Rev. méd. de la Suisse Rom.* 1915 XXXIII 569

Cases of Ollier's disease first described in 1899 as an affection characterized by a unilateral disturbance in skeletal growth are rarely reported. The author describes a case in a girl whom he has had under close observation for eleven years. The details with measurement and illustrative radiographs are given.

The author discusses the pathogenesis with regard to the characteristic unilaterality of the phenomena which was denied by Frangenheim. The author has observed in this case a vigorous unilateral

tendency. While the cartilaginous deposits have undoubtedly participated in the general growth of the bones attacked there is no tendency to autonomous proliferation being thus clearly distinguished from chondromata. They lack the essential qualities of blastomata—excessive autonomous growth. They cannot be considered otherwise than as Ollier at first described them a progressive deformation of the primary cartilage. Instead of being replaced by bone the primary cartilage has been the site of a disturbance of congenital origin causing abnormal development in the extremities of the long bones etc.

W. A. BRENNAN

Leriche R. and Polleard A. The Experimental Production of Bone in Adult Man Apart from Any Osteoperiostic Action (Sur la production expérimentale d'os chez l'homme adulte en dehors de toute action ostéopériostique). *Bull. et mém. Soc. de chir. de Par.* 1918 XLV 1265

The authors believe they have demonstrated that the formation of new bone does not biologically need the presence of osteoperiostic elements.

Their findings have as a basis a case in which a soldier twenty nine years old suffered a severe thigh fracture. The projectile completely destroyed the bone periosteum and the medulla. After surgical cleansing and irrigation the wound progressed favorably and the muscle edges were brought together and sutured over the gaping area of fracture. The surface wound became granulated. The authors cut a sleeve made from two strips of the granulating surface tissue which they reversed and united by sutures over the muscles so that the reversed granulated surface was next the muscle surface. By the twelfth day new true bone was demonstrated to exist at the base of the granulations and the surface of the muscles. This is not in any way related to old bone. The new bone which was radiographically and histologically verified appears in a congested edematous zone of connective tissue in which no bone was present.

The authors therefore think that in adult man by creating a favorable experimental condition bone can be produced without any bone being already present. This favorable condition they term an ossifiable zone (*ossifiable zone*). The authors say that the deposition of bone element in a tissue is preceded by unvarying phenomena: first coagulation of the use of a connective tissue next edema then the connective tissue filled with fibrous colloidal substance which gradually becomes transformed. That is to say under the action adult connective tissue is transformed into a tissue suitable for the reception of osteoclastic infiltration. In connective tissue which has not undergone such change true ossification cannot take place and in the adult the formation of new bone requires this peculiar formation of an ossifiable zone. In the case reported by the authors the sleeve of granulation tissue appears to have fulfilled this rôle of an ossifiable medium. The tissue was young very vascular non fibrous and without any mechanical obstacle consequently bone elements appeared very rapidly in it. There is no question of graft nor of culture from old bone elements but of a gene of bone by precipitation of lime salts in a favorable medium.

The authors discuss the import of the phenomena from different standpoint. (1) It explains many obscure phenomena of spontaneous osteogenesis in the adult which are independent of the postoperative elements. (2) It explains the mechanism of certain very rapid ossifications after total bone excision. (3) It throws light upon surgical therapeutic. As regards this latter if by the aid of granulation tissue an ossifiable one can be produced in which new bone appears it is easy to conceive a number of surgical applications for this method. In an aseptic cavity can thus be filled with bone. The authors have seen a bone at the site of a large defect filled thus with bone. This bone did not proceed from the neighboring bone but was detached from it and joined to granulating tissue introduced into the cavity. This was done three times with a complete therapeutic result.

Although the idea now put forward appears to be in contradiction to the principles of osteogenesis surgery the authors believe that they can be fully reconciled. They are making further investigations and will publish a later report. W. A. BRENNAN

Snyder R. G. A Clinical Report of Non Specific Protein Typhoid in the Treatment of Arthritis
1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924

The action discussed in this report was the result of the introduction of bacterial endotoxin into the blood stream.

The author's report includes 110 patients treated during the past eleven months. The cases are grouped into (1) acute (2) subacute (3) chronic.

The effects of the most important clinical phenomena which were observed in Snyder's series of cases are described in detail. The most important

danger and contraindication which he noted in his work up to the present time are (1) Hemolysis may occur as the result of the intravenous use of distilled water (2) the treatment should start by the use of a small dose 5 to 10 millions (3) if typhoid vaccine is used as a foreign protein therapeutic agent it is necessary to remember that if only one dose has been given the patient is sensitized to typhoid infection to minimize this danger at least two more injections should be given (4) before using any vaccine the previous history of any anaphylactic phenomena should be carefully inquired into.

As the result of his treatment the author concludes as follows:

He has found that intravenous injections of foreign proteins are apparently more efficacious than the usual drug treatment for the relief of cases suffering from acute subacute and chronic arthritis.

2. In some cases there is a tendency to recur with symptoms of a milder type. A large proportion of these patients can be greatly benefited by intensive treatment the percentage of recurrences; no larger than if as large as one is accustomed to see in patients who have been treated by the drug method.

3. There is no evidence that the foreign proteins have an injurious effect upon the kidneys.

4. The treatment is not dangerous if the foregoing precautions are observed.

The vaccine prepared in the laboratories of the Board of Health New York City the author states gives the most reliable and uniform results.

E. C. R. HITSCHER

W. H. R. A. A Series of Seven Cases of Osteomyelitis
Pittsburgh, Pa. 1918, 1919, 1920, 1921, 1922, 1923, 1924

Six cases of osteomyelitis are reported as requiring a series of extremely severe cases as illustrating the fact that the patient may be in a severe septicemic condition before the local focus manifests itself to any noticeable degree. In three of the cases recorded the bone in which the condition later developed showed little or no signs of suppuration on the first operation. The staphylococcus aureus was present in each instance.

E. B. FREED

Francisco C. B. Foot Problem and Treatment with Unsound Troop
1918, 1919, 1920, 1921, 1922, 1923, 1924

Reviews of actual experiences with foot conditions of unseasoned troops are given and some of the measures of treatment are forcibly discussed. Most men the author finds were fitted with shoes that were too small, badly comfortable in civil life but not so in military life. Mucular deplacement as under par in many cases. Many had used the commercial arch which causes great muscular weakness if constantly used.

Soldiers feet grow larger because of muscular development and so soldiers should be fitted with larger shoes than civilians to allow for shrinking of leather

Trench foot is considered preventable. Wet feet were given the Coldthwait strap and Thomas heel. The author favors rejection of men with marked hallux valgus hammer toe and rigid flat foot.

C. C. CHAFFETON

FRACTURES AND DISLOCATIONS

Albee F. H. The Treatment of Fracture of the Neck of the Femur. *J. Orth. p. 518*, 1918, vol. 493.

The author reviews the symptoms, disability, causes and classification. The attention of the medical profession is called to this fracture because of poor results of average treatment. Albee suggests the cause of this and gives the indications and outline of treatment by the bone peg method.

The symptoms with shortening, eversion, disability and X-ray findings are usually sufficient to maintain diagnosis. The medical profession is paying more and more attention to this fracture because it is so often met with in industrial surgery and the present war.

It is not alone a fracture of old age. The terms intracapsular and extracapsular he considers misleading and favors Stimson's classification of subcapital or fracture through the neck and fracture at the base of the neck. The results by old methods give only about 15 per cent good function. Whitman's abduction method gives better results than this but it is his uniform practice to insert the bone peg in every operable case in which the fragment is loose or unimpacted along with the Whitman

He believes that a traction table, Hawley or Albee is absolutely indispensable in the operative treatment of these cases. The obstacles to union of the inner two thirds of the neck of the femur are as follows: (1) mechanics, (2) deficient osteogenesis, (3) intracapsular situation, (4) interposition of tissue, (5) relatively small diameter of the

A great advantage is claimed by the use of an autogenous bone peg accurately fitted into a drilled longitudinally through the neck of the mur with the fragments in good position. The mode of the operation is carefully described in and is well illustrated. The great advantages of the orthopedic operating table is also well described.

The long plaster of Paris spica cast is applied to the toes to the navel with the limb abducted according to the amount of shortening of the neck of the femur. This cast is usually worn six weeks. A short spica cast is applied and worn for a period of time determined by the X-ray and other findings. No weight bearing is allowed for at least 12 months.

C. C. CHAFFETON

Bec and Hdengue. A Case of Cuneiform Fracture of the Upper Extremity of the Tibia. *J. Orth. med.* 1918, vol. 391.

The author quotes a case of a wounded soldier who presented at his right knee a swelling and excoriation and a distinct pressure point at the outer portion of the upper end of the tibia.

The X-ray revealed a fracture of the outer condyle of the tibia. The fibula was intact. In these partial fracture the fragments are according to Fenton usually torn from the outer condyle. The fracture fragment at the external condyle often stays in fibrous contact with the tibial epiphysis but when the fragment becomes displaced it usually turns backward and outward. The unicoronyl fractures are of rare occurrence only 63 cases being mentioned in literature. Bicondylar fractures are of still rarer occurrence. A. STEINDLER.

Everidge J. and Fullerton A. Restoration of Function After Penetrating Gunshot Wounds of the Knee Joint. *Brit. M. J.* 1918, II, 182.

The way in which the knee recovers from injuries is astonishing. The synovial membrane of a joint is now considered almost as useful as the peritoneum.

Restoration of function after civil operations on knee joints are nearly always accompanied by a full range of mobility. Early movements should be commenced about the seventh day after operation. The movements being continued by easy steps until there is a range of at least 90 degrees. As a rule this range is obtained in seven to ten days.

The author has devised an arrangement by which movements of the knee joint may be carried out with a minimum amount of pain to the patient and trouble to the operator. The essential parts of the apparatus are as follows:

1. A hinged Thomas knee splint. These hinges are inserted into an ordinary Thomas splint provided with extra stout side bars. A locking device on the hinges is necessary controlled either by a bolt or a thumb screw, or by locking pins inserted through holes on large flat discs welded to the sides of the bars. This splint is hung by cords sustaining the weight of the upper part fixed immediately above the hinge while the lower part is supported by cords attached to the bars about 15 inches below the hinges.

2. Two overhead rigid bars 5 feet above the bed and extending beyond the head and foot and having considerable inclination toward the foot are arranged. These bars are 1 inch apart and lie over the affected limb. They carry a system of pulleys over which run cords suspending at one end part of the splint at the other counterbalancing sand reservoirs.

3. Sand reservoirs. There are four of these made of conical topped oil drums. The three upper ones are fixed inverted to allow easy escape of sand. The reservoirs are arranged to counterpoise the lower and upper part of the splint by cords and pulleys. They have an up and down excursion according to the variation in the position of the parts of the splint they counterbalance.

About the tenth day the leg is put in the hinged splint. The amount of sand is regulated in the errors so that the splint deforms in angle and the knee bends. During the first or three days the sand is allowed to run from the rear only slowly and the range of movement is made greater than 45 degrees. Each day the motion is increased for a half hour after which the original position of the limb is obtained when the hinge is locked.

As a rule at the end of a week the patient is able to be in active movements and should be encouraged. If he can be sent home with a range of active movement through a right angle and without a splint the joint is unlikely to become stiff again. At this stage all kinds of apparatus to be unattended by harmful results. It is of advantage to apply out massage for a few days and movements of the flexion through good exercise has been obtained.

Willems has for some time advocated immobilization of the knee joints immediately after operation commencing active movement from the very first. He claims an early return of full range of mobility in most cases even here there is no doubtable necessity. He is not deterred from carrying out active movements even in the presence of suppurative inflammation that movement compresses the pus from the recesses of the joint though the incisions made for drainage.

V. C. H. N.

Books J. A. Fracture of the Ankle. *Medical* 1918, 98, 53.

The author's conclusions drawn from a series of articles published and an observation of cases are (1) that the fracture occurs more frequently than commonly supposed (2) that when the end displacement of fragments immobilization is all that is required and the end result usually no malunion (3) that when the end malunion is present or rotation of fragments penetration usually necessary for a complete reduction (4) that in achilles tendon fractures reduction (5) that this is usually the best full weight bearing until at least four months have elapsed if the best functional results are to be obtained (6) that in old fractures with deformity castage is usually good, the best result.

E. C. K. T. S.

O. N. W. B. Observations on Fractures of the *Journal* 1918, 98, 8.

The author admits that there is as yet no consensus of opinion concerning the treatment of fractures and in studying the present evidence for and against standardization of the clinical method the following clinical observations seem pertinent.

1. The infinite variety of traumatic agencies causing soft tissue and integumentary damage.

2. The multiplicity of anatomical situations and the attendant variety which may be produced by the external violence.

3. The extreme variation in degree of the result in bony union and different localities under circumstances seemingly identical.

4. The diversity in the extent of the injury inflicted upon the overlying integumentary vessels and vascular structures.

5. The physical status of the individual before the injury and the time which may have elapsed since the injury.

6. The presence of local or constitutional disease which might militate against normal union of the injured fractured or lacerated tissue.

7. Finally the type of the individual's physique and the nature and method of its production must govern the indications for the operative procedure.

Based upon the foregoing clinical propositions the subject is then elaborated and discussed. Owen believes the successful treatment of fractures must necessarily be strictly individualized and he thinks amputation should be considered only where irreparable damage has been inflicted upon osteo-vascular union and vascular tissues. Exception is taken to the statement that fracture can occur from muscular contraction alone unless the bony structures involved be already weakened by debilitating disease such as syphilis or tuberculosis.

Reduction with perfect maintenance of fragments and union without anatomical deformity or functional impairment will sometimes be found impossible of accomplishment by any method yet devised and one unsatisfactory ultimate outcome will counteract the benefits derived from a technically successful result. The individual for whom an imperfect outcome is secured is a living witness to the presumed lack of technical skill on the part of the attending surgeon whereas those for whom perfect anatomical and functional results are obtained furnish no external visible evidence to emphasize his surgeon's knowledge and skill.

Since the perfection of modern instruments of diagnosis and precision including the fluoroscope and roentgenography have been educated to demand that the surgeon secure something more than fairly satisfactory function in the treatment of fractures of every type. Anatomical deformities following the treatment of fractures have been used as the basis of medical lawsuits for malpractice in all other cases combined with the foregoing considerations of the apparent implication of the individual's fate in the surgeon should insist upon competent consultation and further fortify himself by at least a thorough knowledge of the principles of the application of plates and after reduction.

There remains considerable divergence of opinion concerning methods which attempt the production of nonabsorbable substances into the tissue so as to maintain reduction such as plates, nails, screws, etc. which necessitate subsequent surgical operation for their removal. Owen believes the plate is seldom indicated and that in injudicious comparison the hand and the screw may markedly enhance the clinical degree. The majority of them have to be subsequently removed and in some instances amputation has become necessary as a life saving measure.

In oblique and comminuted fractures of long bones open operation with application of kangaroo tendon silver wire or Grant's pinlet method may be employed to maintain the fragments in apposition. The autogenous bone graft will be found satisfactory in properly selected case. However open operation should never be performed where approximation of the fragment can be maintained by the closed method.

In the after treatment prolonged joint fixation should be avoided. Early application of both gentle massage and mild passive motion will be beneficial but early vigorous active movement must be practiced with caution. Persistence of pain usually indicates either improper reduction or nerve injury.

Nisong F G. The Relative Values of the Principles of Extension Suspension and Mobility Emphasized in Both Civil and War Practice by the Hodgen Wire Cradle Extension Suspension Splint. J Am M S 1938 1: 190.

The one clear idea in treatment of fracture is to obtain fixation and immobility. In obtaining the other principles of equal importance such as skin muscle nerve vessel and the patient himself are frequently overlooked. In considering the proper appliances for treating fracture several principles are involved. The first is fixation and only especially in fracture of the femur extension. An oblique fracture of the femur will produce deformable deformity no matter how immobile the fracture is held if extension is neglected. The application of the extension whether it be by Buck splint or Steinmann's pin etc. is really made through the great fascia lata. Extension of course always implies counterextension.

A knowledge of mechanics muscle attachments and X-ray are quite essential. Suspension and mobility are important factors in fractures of the femur. This mobility of the patient is obtained by suspended splints because the ball and socket hip joint allows a wide range of motion without danger of moving the site of fracture. The principle of suspension is of great value in treating compound fractures and war wounds. It allows easy dressing and examinations irrigations etc.

An important item is flexion of a limb in a position of physiological rest. Hyperextension and hyperflexion produce pain and muscle strain and probably a paralyzed muscle. Massage and care of the skin are very important.

After reviewing all methods and types of fixation splints the wire cradle splint embodies more of the essential principles of treatment than any other. It can be made to fit almost any requirement. The Thomas splint is the most popular today especially in war work. The Hodgen splint is a most perfect type of cradle splint and is especially applicable for war service. Extension and counterextension applied in any requisite amount and secured better than with any type yet devised. The inclination of

the suspending cord will give any amount of extension. Counterextension is obtained by gravity simply raising the foot of the bed sufficiently. Iliac and ischial pressure is avoided.

Nearly all the modifications of the Hodgen splints have marred rather than improved it but it can be easily modified if needed. The distinctive values of the Hodgen splints are (1) immobilization of the site of fracture (2) it gives any amount of extension with gravity counterextension (3) abduction and adduction are easily maintained (4) extension is within the splints leaving the limb free (5) physiological flexion is secured (6) the patient is freely movable (7) an open wire cradle splint allows massage inspection etc. (8) the splint is easily modified to meet conditions (9) a modification is devised for transport service which is not yet excelled.

J J KURLANDER

SURGERY OF THE BONES JOINTS ETC

DeBose F G. Arthrodesis and Bone Graft in Reconstruction Surgery. Surg Gynec & Obst 1918 xxxv 331.

DeBose urges surgeons in civil practice more frequently to advise operation where any cripple would be benefited.

Attention is called to the absence of quick and dramatic cures which are so attractive in other surgical endeavors as compared with the tediousness and extent of time required before desired results and efficiency are obtained in orthopedic surgery. It was also emphasized that simplicity in armamentarium is easily obtainable by seeking the aid of mechanics and blacksmiths and with the expenditure of some mechanical ingenuity on the part of the surgeon. A fixation frame model was exhibited which permitted the patient to be securely immobilized at any part of the trunk and extension and counterextension made on any of the extremities without risk of subsequent misplacement of the adjusted or apposed fractures or arthrodesed joints.

He urges the institution of operative relief before such destruction of the bony framework of joints occurs which removes material essential for good results following arthrodesis.

Attention is called to the role played by focal infections as an etiologic factor and as a source of complications following bone and joint surgery. Stress was laid on the preliminary preparation of the patient eliminative supportive and vaccine or serum protection.

Lane's aseptic technique is commended and its adoption urged as essential to prevent loss of life and failure in obtaining results.

The hypochlorite of soda treatment of infected wounds especially of bones and joints after the Carrel Dakin method is endorsed as the quickest means of obtaining fields fit for clean operative work which were infected when presented for surgery. Murphy's formalin glycerine injection in closed septic joints for removing the infection and

preparing the joint for early operation has been repeatedly tried by him with satisfactory results.

Illustrative cases of arthrodies of the hip, knee and elbow ankylosis and bone grafting in osteitis cystica fibrosa and Pott's disease are reported by him.

Cuneo B. Tl. Use of Bone Grafts in the Treatment of Pseudarthrosis (51 implants effected)
Bull. et J. de l'Arm. P. 981, 99

Although the progress of arthroplasty has shown a considerable decrease in the number of amputations there has been a corresponding increase in the number of pseudarthroses. To judge by the number of such cases met with and the resulting firmness, it appears to be an opinion prevalent among many surgeons that pseudarthroses are entirely curable. This scepticism is supported without reason, considering the number of cases operated upon two, three and even more times without success.

The author has had occasion to observe a large number of pseudarthroses and has made study of the condition both clinically and by anatomical examination.

Cuneo believes that pseudarthroses result from atrophy of the bone extremities in a fracture with loss of substance. It is difficult to explain the exact site of the bone end, but it is probably due to sequestrum, to balance and injury of the surrounding articular system.

Cuneo thinks that every pseudarthrosis not involving a large loss of substance should be considered curable. Infective pseudarthroses ought to be operated upon when the clinical and radiological examinations show a rest of the process of epiphyseolysis. There should be a firm and distinct fracture tract operating some months later when contraction is complete. When the operation is deferred the patient should be furnished with an apparatus all along as far as possible preservation of the movements of the joint adjacent to the pseudarthrosis as well as exercise of the muscles of the limb. The prosthesis worn should be such as to favor the correction of deviation of the fragments and to prevent shortening.

In the operative treatment of pseudarthrosis Cuneo prefers bone graft as a treatment which is available and permits the complete restoration of the joint. The autogenous graft is preferred and may be a single graft or osteoplastic lamellae both giving equally good results. Cuneo uses both but thinks it is possible to give their precise indication. The graft is indicated when it is not possible to bring the bone end in contact with the graft then maintaining them in good position. The osteoplastic lamellae are used where the bone extremities can be prepared in good conditions. In employing grafts Albee's inlay method can be used with the greatest advantage as the graft takes root quickly holding its place even in the presence of infection.

Cuneo's clinical and experimental findings lead him to think that (1) a graft does not possess any

osteogenic power (2) preserves the periosteum on its surface has no value (3) vascularization especially by the faces in contact with the bony bed (4) from the biological viewpoint the graft weakens the osteogenic activity of the bone extremity. It is also a specific conductor which guides the osteogenic action along the desired direction. It plays what Imbert has termed an osteotrophic part.

For cutting and embedding the graft Cuneo uses a specially designed instrument similar to an electrical driven dental engine. This is described and illustrated. This instrument can also be employed for osteosynthesis.

In pseudarthrosis operations the chief fear is infection. Although the wound is almost entirely sutured in order to obviate infection the author leaves a few Dakin irrigating tubes inserted in the operated area.

The time elapsed is not yet sufficient to report definitely on the end results of the author's cases but the radiologic and clinical examination of these operated patients have up to the present given most satisfactory results and later Cuneo promises to submit a fully detailed report. W. A. B. E. A.

Delm S. J. Consideration of Treatment of Knee Wounds (Littell, M. T. D. Pl. ed.)
Rev. de l'Arm. P. 981, 49

The author reviews the surgical treatment of war injuries of the knee especially the evolution of the method first suggested by Delore at the end of 1915 of immediately closing the synovial leaving small drain or mesh or not according to the lesion. Late in 1916 Ducloux reported a number of successful followings this technique. Since then the cases of success reported have multiplied and the author no longer reports that out of 130 cases of knee wounds treated altogether at the front 104 cases of penetrating wounds of the knee were treated by this method and immediately treated. The method followed is wide U-shaped arthrotomy through the patellar tendon. The joint is deeply cleansed, a head with ether and prochlorperazine is removed. If the tissue then looks satisfactory the synovial edge is excised and brought together and immediately sutured with drainage.

The 30 cases of knee injuries treated by the author give the following results: (1) 4 injuries probably para-articular treated by simple puncture with recovery. (2) 4 hell injuries treated by arthrotomy and ligation of the distal end of the suprapatellar artery by gangrene and death by tetanus. (3) 11 well treated by primary resection gave 4 deaths and 17 recoveries. (4) 14 penetrating wounds treated by U-shaped arthrotomy and complete suture gave recoveries in 11 and complete mobility with some ankylosis in 3 amputations and 1 death.

Comparing these results with those reported by Ducloux in 1916 65% of suppurative arthritis the author's cases show recoveries 86.5% primary complete amputations 28% percent

1 deaths 0.9 per cent Duval's cases show death 6.6 per cent condylar resections 21.4 per cent tal resections 21.4 per cent amputation 0.5 per cent recoveries with ankylosis 8.8 per cent The author states that whatever criticism may be made with regard to the end results of this method cannot be denied that it gives immediate results much superior to other methods less mortality fewer amputations and greater preservation of ability

The author has added a note to his article stating that since a year ago when it was written the lateral throtomy has been adopted by him in the simpler cases under reserve Also the immediate mobilization method inaugurated by Willems promises even more rapid and better recovery

W. A. BRENNAN

R. and Pollard A. Biologic Researches on Osteosynthesis with the Lambotte Plate (*Recherche biologiques sur l'ostéosynthèse à la plaque de Lambotte*) *Bull et mémoires Soc de chir de Par* 1918 xlv 1145

From a study of 15 cases the authors find that 1. Osteosynthesis with the Lambotte plate results in the repair of a fractured bone and hindered regeneration

The form of the Lambotte plate is not very desirable a narrower plate with the edges not so sharp would be better From this point of view the new plates are preferable

2. For osteosynthesis it would be advantageous to use plates which the tissues will not attack and to use a metal the products of which are not harmful such as aluminum magnesium etc

W. A. BRENNAN

B. H. Surgical Aspects of Extremities in Warfare *Mississippi Valley Med J* 1918 x 237

1. The management of the extremities in war differs from that of surgery mostly in the severity of the injuries and the extent of the infection The larger number of wounds are caused by high explosive shells shrapnel bombs and hand grenades which produce large lacerations with severe laceration and great destruction of tissues

2. The dominant factor in dealing with gunshot fractures of the long bones especially those with much comminution or splintering is extension The extension force must be properly fixed to the distal end and can be accomplished by strips of adhesive plaster applied to the distal end of the fracture supported by a circular strip and covered by a gauze bandage so as to distribute the pull over the surface of the limb

3. In cases where the distal fragment is short or to a large joint where a large amount of traction is necessary where extensive abrasions are present or in case of multiple injuries in the same limb the Steinman nail and the Schmetz clamp are used Straight wooden and metal splints have

no place in the treatment of gunshot fractures The Hey Grove or English splint allows the constant dressing of the infected wound without disturbing the extension or fixation This splint is made on the order of a Hodgson's wire cradle splint but instead of being suspended free is fixed and the limb is extended inside the frame instead of with it

Massage and mobilization of the joint are important Massage should be light the muscles should be stroked not kneaded Passive motion of the joints should be begun as early as the first week Operative treatment on fractures should never be done during the suppurative stage Dakin's solution was used with good results when associated with Carrel's technique

In infected wounds of the hands forearm elbow foot and ankle best results were obtained with free drainage putting the infected limb into a solution of aluminum acetate and changing the solution every twelve hours Numerous cases of compound fracture were exposed directly to the sun's rays for several hours daily with gratifying results

E. B. FREITAG

Willems C. Treatment of Purulent Arthritis by Simple Arthrotomy Followed by Immediate Active Mobilization (*Traitement de l'arthrite purulente par l'arthrotomie simple suivie de mobilisation active immédiate technique et résultats*) *Bull et mémoires Soc de chir de Par* 1918 xlv 1098

Willems implies his previous reports regarding the utility of arthrotomy followed by immediate active mobilization of the limb and gives his results The reason why arthrotomy failed when used alone was because it did not drain a purulent arthritis while resection did But Willems considered resection too radical a procedure for the purpose of drainage alone There was little choice however for if resection were not done the chances were that an amputation might be necessary

Immediate active mobilization however assured drainage With movement of the joint such as the knee it could be seen that pus was readily expelled between the synovial surfaces and the more extensive and complete the movements the greater was the amount of pus expressed

A vertical linear arthrotomy usually bilateral suffices for the knee joint The general rules applicable for the knee apply to the other joints also except that their form requires some variation

A purulent arthritis treated by arthrotomy and active mobilization evolves like an ordinary abscess Owing to the excellent drainage infection is confined to the synovium It is also owing to the drainage that periarticular abscesses which are so frequent in purulent arthritis treated by the classic methods are unknown with active mobilization

Temperature is kept within low limits The muscles of the limb are entirely or almost entirely preserved in their normal state There is consequently a definite preservation of movements Willems says that when the method is well applied ankylo-

sis can always be avoided. In the great majority of cases movements are quite normal and the limb shows no functional defect.

In purulent arthritis movement are possible just the same as in non-infective arthritis. Iain felt only when the drainage is insufficient it ceases when the joint is empty of pus.

Willems has stated 60 cases of purulent arthritis among 17 found by the method of the knee and of the elbow and of the tibia and fibula. Altogether he has obtained 13 perfect recoveries with preservation of movement, 60 cases with incomplete movement, 4 with ankylosis, and 1 case resection as necessary. The knee gave perfect recovery, 3 ankylosis, and resection the elbow gives 3 perfect recovery and 1 ankylosis.

No evidence of the imperfect result in any case is imputed to the method adopted. Of the 3 perfect recovery the other 5 are such that the bone lesions. All the other hind joint articular fractures accompanying the purulent arthritis.

W A BRUNN

Martin J. Amputation of the Thigh in War Surgery. (Surgical Implications of the War.)
d g) R d / P) 8 l 4

The author has done 53 thigh amputations for war wounds. Shows the course of the case. In the first 3 months the mortality was 46 per cent, 28 operations in the following 6 months the mortality as only 6 per cent, 5 operations. The high percentage of the operator in the early part of the war the conditions of present day are our disadvantage. We all know as no hence surgical treatment was much of necessity.

The author considers that amputation of the thigh is not as severe an operation as it is generally and rapidly under general anesthesia with ethyl chloride. The good appearance of the patient after a day and the actual result obtained by the author are the basis for this opinion.

The reason for the poor appearance of the operation are first a failure to follow the operation being long and producing shock, later hemorrhage.

reform secondly lack of clinical experience amputations were deferred until the outbreak of infection.

The experience gained in war surgery has lessened the number of amputations by a more rational treatment of the lesion. Can a still greater improvement be looked for? It will depend on the nature of the indications calling for amputation.

Primary amputations will always have a certain degree of mortality due to traumatic shock and not to operative shock. The prognosis is that of shock in general aggravated slightly by the operative shock.

The author has obtained brilliant results in cases performed under a gasous anesthetic. In this case the infection calling for amputation which complicates the prognosis and the prognosis will depend on how completely the infected area has been removed.

The author's results in septicæmia are very satisfactory, but evidence is scarce, wish for better except to be the entire elimination of amputations for this cause.

Therapeutic always make circular amputations.
W A BRE

Chapman W. A. A Modification of the Stokes Gutter Amputation. B. M. J. 98, 58

The human heel is nature's stump. Stems amputations the nearest reproduction and the Stokes gutter comes next. Every stump should be fashioned where possible in the shape that it will bear upon the end of the bone amount of the body weight.

One cause of failure in the Stokes gutter operation is the displacement of the patella upward by the pull of the quadriceps extensor another the pressure of the leg, and the measures to fix the patella in its normal position.

In the case the author has set the quadriceps at home to the upper edge of the patella completely crossed and then stitched the margins of the patella to the edge of the femur. The period of amputation of the femur. One or two old to the leg at gut stitches will usually be sufficient and from the bottom there through the skin will make sure and be sure.
A C HUNT

SURGERY OF THE SPINAL COLUMN AND CORD

Cumtong C. G. T. Symptomatology and Diagnosis of Wounds of the Spinal Cord.
b y M. A. 98, 17

Cumtong calls attention to the necessity of making a diagnosis of fracture of the spine because of the frequent occurrence of medullary or radicular lesions in connection with the fracture. Medullary lesions must be studied first from the view point of their transversal extent (hemisections and partial lesions) second from the point of the vertical direction (systematization the vertical direction).

a most important point for the diagnosis of the seat of the lesions.

From the local standpoint the method of distinguishing the symptoms (1) that follow (2) that of reflex origin (3) that of compression. From the pathological standpoint (1) cases of a met (2) total dislocation (3) partial section each of which possesses a different clinical picture.

Total dissection is characterized by a complete abolition of the musculature to a quadriplegia paraplegia and a long time to the life.

no constitutional influence makes it far from being an ideal cancer cure. Improvements in methods of using it and greater accuracy in its application offer hopes of added usefulness. The author believes that its proper field is in the comparatively early stages of cancer and that as a remedial agent in advanced or inoperable cancer it really will never represent its greatest usefulness.

ABRAHAM HARRIS

Descomps P. and Clermonthe A. The Use of Compound Artificial Serum in the Treatment of Shock (*À propos du traitement des chocs par le sérum artificiel composé*). *Bull. et Mém. Soc. de Chir. de Paris* 1918 li

The authors treated shock in 13 patients (5 of them hemorrhagic or toxic shock) by a compound artificial serum injected intravenously.

The serum is composed of the following:

1. About 500 ccm of Heden's serum which is thus made up: chloride of sodium 6 gm, bicarbonate of soda 10 gm, chloride of potassium 0.5 gm, calcium 10 gm, phosphate of soda 30 gm, glucose 100 gm.

Five ccm of a serum containing extracts of thyroid 50 gm, hypophysis 50 gm, suprarenals 50 gm, testicles 15 gm, in 5 gm.

3. Two alkaloids: sulphate of strychnine 0.5 gm, crystallized digitalin 0.1 gm. Camphor 1 gm in 500 ccm of water should be added to the respiratory stimulant.

The object of this serum is to supply the temporary loss or diminution of the principal endocrine functions of the blood of the shocked and thus restore the functions of circulation as disturbed. It then plays an important part in every kind of shock.

The technique employed for injection is that followed by Jeanbrau for blood transfusion. It occupies about ten minutes.

In the 13 cases in which this serum was injected there were 5 improvements or recoveries and 8 failures. In the 8 successful cases the pulse improved, the arterial pressure increased rapidly. At the same time polyuria was noted which was sometimes considerable. Daily urea eliminations varied from 0.4 to 0.8 grams. This shows the action of the serum on hepatic functions.

The food supply during this period was strongly osmogenous. The first urine passed after injection always shows a very abundant sediment of ammonia, magnesium and oxalate of chalk phosphates. In density this urine varies from 1.014 to 1.017. In 3 cases there was a heavy perspiration, delirium and psychic disturbances disappeared in 3 cases.

An animated discussion followed the authors report dealing principally with the different rates of the phenomena comprised under the term shock, especially the distinction between toxic shock

and the nervous condition immediately following a traumatism which Delbert terms collapse.

W. A. BRENNAN

Morrison J. R. The Heart Risk in Surgical Operations. *Mississippi Valley M. J.* 1918 xvi

If patients with serious cardiac lesions are to be operated upon for instance those with auricular fibrillation, auricular flutter or heart block operation should be done by an experienced and skillful surgeon with a competent anaesthetist and in the best surroundings that can possibly be obtained. The best clinical criteria for operation are: (a) the ability of the patient to walk about and attend to their ordinary duties of life; (b) his ability to ascend and descend stairs without discomfort; and (c) the absence of dyspnea and cyanosis. Patients with diminished systolic pressure and pulse pressure after taking exercise are not good risks.

C. B. FREILICH

Barthelemy and Pfulb. Clinical and Histological Study of the Cicatrization of Burns Under Paraffinated Dressings (*Étude clinique et histologique de la cicatrization des brûlures sous les pansements à l'oléine de paraffine*). *Arch. de méd. pér. l'ar.* 1918 xvi 15

The authors agree with the findings of Barthelemy and Sanlrit that paraffinated dressings of burns exactly realize the statement of Hervez de Chégoin.

When the epidermis is deficient it must be replaced as approximately as possible by some substance which the exposed derma supports with the greatest indifference. Paraffin is endowed with remarkable chemical inertia and by its physical properties constitutes a protective covering which isolates the parts covered and fulfils the position of epidermis.

Clinically the employment of paraffin is justified by the results obtained in cases of burns in several hospitals of Paris since 1903. The results show that there has followed suppression of pain rapid and satisfactory progress of the wound and a supple scar.

From the theoretical standpoint however the question is debatable. Every burn must be considered as an infected wound and the abundant suppuration found beneath the paraffinated dressings shows that infection persists until cicatrization. Paraffin is not an antiseptic; it cannot destroy the microbes which it covers and which are found in full vitality at all stages of cicatrizations in the purulent exudate.

The authors' study has however demonstrated that this fact cannot be considered an objection for two reasons: (1) study of cicatrization has shown that it is effected just as quickly as in aseptic wounds which are kept aseptic; (2) the authors have found by histological examination that infection is confined to the surface and never penetrates to the connective tissues.

addition of adrenaline. The injection made in the third or fourth lumbar interspace the dose being 12 to 15 cc of a 5 per cent cocaine solution. Anesthesia of from three-fourth of an hour to two hours is produced. The injection may be repeated if the effect is not complete and the author has practiced repetition after a seven day interval but customarily it is necessary to repeat oftener than with the twentieth day.

The author has found the injections to give very good results in all types of pain involving the nerves or roots of the lumbosacral plexus. Where neuralgia is symptomatic plan the usual

W. A. B.

C. N. S. M. The Pathology of the Peripheral
N. G. 98 59

The paper is a brief review of the literature of nerve injury operated upon by Alder Hey Military Orthopedic Hospital. The injuries to the nerves were not always due to direct trauma but were often the result of indirect injury to the bone which it passes with various formations resulting in partial or complete paralysis. Operation is not done until at least six months after the wound had healed.

Blood pigment plasma cells proliferating connective tissue cells are peculiarly at the severed end are often found in the nerve ends. Vascularity increased.

Incubation is increased equally at the severed ends and the scarring of the nerve is more nerve tissue than in the normal state. In only one case did the author find sclerotic connective tissue. Adhesion around the nerve are carried by the blood vessel. Increase in connective tissue seen at some distance away from the point of severance.

Nerve growth was found everywhere and the author found that the connective tissue when transplanted healed nerves in painful scars. The hardness of a nerve is due to the connective tissue to great pole in the nerve tissue to fibrous tissue formation. Old degenerating nerve tissue forms the better conductive paths for the tendril. The nerve tends to fill blood vessels and grow in thromboembolism. C. C. C.

Baron A. and Seiber W. D. The Nerve Suture
N. Nerve Injury M. C. 100 13

In defects of the ulnar nerve in the middle of the forearm the resection of the sensory dorsal branch makes possible the pulling out of the peripheral nerve end so that flexion of the wrist joint can be better utilized in order to bridge the gap. The gain amounts to 10 or 12 centimeters and according to the author it saves transposition of the ulnar nerve higher up to the front of the interal condyle.

In defects of the tibial nerve resection of the median branch to the nerve head of the gastrocnemius also liberates the nerves that the flexors can be better utilized. The gain obtained between the end even centimeters.

Aside from this method of the position of the lacerated nerve the author advocates the following method of elongation of the nerve for the purpose of bridging the gap.

He prepares the nerve end free approximates them as far as possible and then fastens the end together by several silk sutures which catch the end neuroma. The prepared ends of the nerve as well as the sutures are covered with vaselene. The joint then fixed in extreme flexion by bandages which are left on for three weeks then the bandages are removed and the joint left free.

Three weeks later six weeks after the first operation mechanical treatment begun until gradually complete extension is obtained. Then a second operation is performed which completely unite the distal and proximal nerve end. The whole method rests upon the question whether or not stretching of the nerve can be obtained by this method. According to the author the method has not yet been proven out clinically but experimentally it is found by working on the three large nerves of the upper extremity that the nerve sutures held fast and that considerable lengthening of the peripheral nerve could be obtained by this method.

The author quotes one case in which this method was used. While the operation itself seemed to be carried out without technical trouble or mention of the ultimate effect of it on the paralyzed nerve. A. S. 1. D. L.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS ULCERS ABSCESSSES ETC

Ewing J. R. Influence of Radium in Cancer Tumors
Int. J. R. 1908 43

The author maintains that the action of radium is specific in the sense that it produces a result which have not been duplicated by any other method. It produces histologic changes in tumor tissue which one does not see under any other circumstances. It causes formation of liquefaction necrosis and trophy

of the tumor cell and stimulates the growth of the surrounding tissue. Different tumors react in a very different manner to radium some such as very cellular and rapidly growing tumors being extremely susceptible and others very resistant. Failure to recognize these essential differences is largely responsible for the conflicting results of radium therapy. The same amount of radium applied to the same type of cancer will varyably produce the same results.

The fact that radium as employed at present has

tion of white cells. Thus the total white count does not constitute crucial evidence that there is an absolute leucopenia in typhoid fever. There are at least three factors governing the leucocyte count: (a) the infecting organism, (b) the severity of the infection, and (c) the location of the infection in the host.

4. The failure of foreign substances to be distributed in the blood stream according to mechanical laws has an importance bearing on the transmission of infectious diseases. It offers many arguments against intravenous injections of infective material for the transmission of a disease to resistant animals for the reason that (a) considerable dilution of the material necessarily occurs, (b) extensive fibrin formation is offered for the action of any deleterious effect which the fluids and cells of the blood may exert, (c) fine suspensions and limited amounts of material are necessary in order to avoid embolism and sudden death, (d) finely suspended matter is not distributed equally throughout the blood stream but a large proportion is removed by the lungs. Many of the objections could of course be overcome by intrarterial injection if it were made into the proper side of the circulation.

5. Inoculation into the pleura for the transmission of splenomegalies to lower animals possesses certain advantages: (a) it avoids many of the disadvantages of intravenous injection, (b) the injected material can be temporarily protected from the immediate action of the fluid and cells of the body, (c) the mechanical advantage is considerable since large pieces of material can be used, (d) the pleura is well adapted for study since changes in its size in certain animals can be readily determined by palpation. (C. R. L. BELL)

SERA VACCINES AND FERMENTS

Rouviellois, Guillaume Louis Pédepride and Thibierge. *Treatment of Gaseous Gangrene by Antigangrenous Sera* (Traitement de la gangrène gazeuse par l'emploi de sérums antigangreneux méthode de Sacquépée). *Pl. H. I. mém. Soc. de chir. de Par.* 1911, 15, 1226.

Since August 1901, the authors have tried the effects of combined antibrion septique and antibellonensis sera in treating gaseous gangrene cases as a complement of surgical treatment. The method is based on the fact that Sacquépée considered it established that the septic vibration and the bacillus bellonensis were the pathogenic agents concerned in primary gaseous gangrene.

The method has been employed from a curative and also from a preventive viewpoint and in true gaseous gangrene cases as distinct from simple gaseous abscesses.

In 12 cases of manifest gas gangrene treated by surgery alone without serotherapy there was only 1 recovery. The 11 others died within forty-eight hours.

There were 34 cases of true gaseous gangrene in which the local symptoms were accompanied by se-

vere general symptoms treated by serotherapy combined with surgery. 1 of the cases arrived with the gangrene in full evolution in the 13 others the symptoms did not become fully manifested until at least 4 days later. All were limb wounds, 18 cases being multiple injuries and 31 cases involving the lower limb, 9 of which were accompanied by vascular lesions.

The time of application of the method is divisible into two periods. In the first the procedures were experimental and the details not fully worked out. In the second period only those procedures which gave known good results were employed. In 6 cases treated during the first period it was established that the two sera were quite inoffensive and that the dosage used (20 ccm. not repeated) sufficed for amelioration or recovery. During the second period higher and repeated doses were used. Twenty-five cases were thus treated, 5 of these died ultimately of other causes but were completely cured of the gaseous gangrene. Of the 6 others, 14 recovered and 6 died. Short histories of the 14 recovered cases are given. Generally a notable improvement was observed from the second or third day and the recovery was rapid. Seven of the cases underwent subsequent amputation and 7 recovered without amputation. Of the 6 deaths, 3 arrived in a dying condition and died a few hours after injection, the serum not having had time to act. The 3 others in good condition died after fourteen, twenty-four and seventy-two hours respectively.

As a preventive measure serum is only injected by the authors in those cases in which a gaseous gangrene is likely to occur. In 12 such cases where there was no massive mortification of the tissues there was only 1 failure and this yielded to further treatment. In 6 cases with massive mortification all recovered without the development of gaseous gangrene.

The technique followed by the authors is to practice the surgical treatment called for exactly as if there was no question of serotherapy. The sera employed are the antibrion septique serum prepared in the Pasteur Institute and the antibellonensis serum prepared in the laboratory of the Fourth Army. In the usual gaseous forms of gangrene when manifest for the first injection the authors use antibrion septique serum 40 ccm., antibellonensis serum 40 to 60 ccm.

The intravenous route is preferred. After six hours the same dose is injected subcutaneously, 18 to 24 hours after the second injection a similar dose is repeated subcutaneously. The second and third dose may be delayed if the clinical circumstances require it. As long as the toxic infection exists from 10 to 40 ccm. of each serum should be injected daily but when amelioration is observed the daily doses may be rapidly decreased.

In the oedematous forms of gangrene the dosage is 60 ccm. of antibellonensis and 10 ccm. of antibrion serum intravenously repeated as above.

In the preventive treatment the dosage is 10 ccm.

With regard to the circulatory element in the limb after ligation of the principal vessel with a thread that ligation of the principal artery does not necessarily mean gangrene and that simultaneous ligation of the vein favors nutrition of the limb and diminishes the danger of ischemia.

The symptoms of reaction between the limb and the rest of the body are especially at the root of the limb () the limb is somewhat colder than the rest but keeps sufficient temperature (3) motion is not completely abolished especially in the flexor probably because the blood supply is richer than the extensors.

The study of the blood pressure in the limb is most interesting. With the Pachon instrument at the time of operation the pressure is normal. It remains at zero for a varying time perhaps for three or four days. Then the first oscillations appear and the energy gradually increases. The interpretation of this is that the collateral compensatory circulation is progressively established. Because of the pulse is the rule in these operated patients but the progress is more tabular than the venous tension explains the installation of a new circulation. This is not sufficient for an entire restoration of function but it suffices for every functional capacity. The author gives a number of illustrations.

Torre, J. Salinas, H. H. V. Cocle and Its Treatment (El Niño y la tibia) 77
Lm 98

The author finds that there are two principal classes of cocle: primary idiopathic or essential and secondary. The primary type may be acute or chronic.

In the operative procedures on cocle at the techniques should always have precedence over mutilating one. The method of Del Valle represents the best type of conservative technique. While Ivanisseitch and Cegre describe operations of the mutilating method Del Valle's method consists in lessening the venous congestion by alternating ligation and by suspending the testicle to a convenient height correcting the position. Del Valle has treated 10 ethiopian cases not of which he has recorded five to four years after operation. In only one case did he fail to obtain a complete cure and this failure is attributed to an error in technique during operation. The author has personally seen 30 cases treated by this method and it only failed in 3.

The operation is carried out in 6 stages by Del Valle as follows are described as illustrated by the author. In any conservative method the spermatic artery should be preserved and the technique of all three authors quoted fulfilled. Del Valle's technique however in this regard is especially applicable in every leg cocle.

Particular secret my indicated only in except on cases in which the cocle process is situated entirely on the tibia and as a complement a y

procedure when other means employed are insufficient.

According to the findings of the author and others the different disposition of the discharge of the permatic ens into the venous cavity on the right and on the left is not the first consideration in the principal part of the cocle. The author finds that a cocle is to be hit 4-6 times as against 1 time to the left.

The author's strong indication of the Del Valle treatment with an account of its simplicity of technique its conservative character and its application to all forms of cocle ought to be preferred as the method of choice.

W. A. B. ANN

SURGICAL DIAGNOSIS PATHOLOGY AND THERAPEUTICS

Flint, M. S. Immunity and Tissue Transplantation. Comparison of Heterotransplantation and Homotransplantation. J. Med. Res. 10 353

In previous articles the results obtained when tissue is transplanted into normal and immunized animals have been reported in all the experiments guinea pigs and rabbits thus not an animal of different species. Certain differences are noted in the reaction about the transplanted tissue in rabbits and guinea pigs seemed possibly after it to determine whether the differences are dependent upon dealing with heterotransplants in the one case and homotransplants in the other.

The chief difference noted was in connection with the leukocyte reaction in the normal animal. This was distinctly more marked in the guinea pigs and guinea pigs than about the tissue in guinea pigs. All it appeared possible that the other differences between the tissues in normal and immune animals might be more fully interpreted if the difference between the reaction of tissue in homologous and in heterologous animals were examined.

A series of experiments in which rabbit and guinea pig kidneys were transplanted into the rabbit and guinea pig, a therefore carried out. In all experiments the pieces of kidney removed for implantation were placed in pockets in the subcutaneous tissue of the abdomen of the animal. The pieces were removed at various intervals up to three weeks after inoculation and resectioned for histological examination.

In only one respect were any gross differences noted between the tissue removed from the two animals. The pieces in the rabbits were not at any time firmly fixed by connective tissue or a distinctly encapsulated. They were in the guinea pig up to the eighth day the pieces were either loose in the subcutaneous pocket or were fixed at one or two points later however there was distinct and dense capsule about the tissue in the guinea pig. In the rabbits however the capsule but either the molar

gou or heterologous tissue which appeared at the later stages was thin and was formed by a slightly thickened portion of the subcutaneous tissue. Beyond this no differences were noted macroscopically in the tissues in the two animals.

Fleisher concludes his study as follows:

Guinea pig kidney transplanted into the guinea pig shows active regeneration at an earlier period than does the same kidney transplanted into rabbits eventually the degree of regeneration is the same in both animals. Rabbit kidney transplanted into rabbit shows far better regeneration than does the same tissue transplanted into guinea pig. At best the rabbit kidney does not show as good regeneration as does the guinea pig kidney.

The connective tissue reaction is more marked about homotransplants than about heterotransplants. In general the connective tissue reaction is more marked in the guinea pig.

The leucocytic reaction about rabbit kidney is more marked than about guinea pig kidney when these tissues are transplanted into guinea pigs. A similar difference is not noted when the same tissues are transplanted into rabbits. The leucocytic reaction is constantly more marked about tissues in rabbits than about tissues in guinea pigs. A late leucocytic reaction appears about homotransplants in guinea pigs but a similar reaction is not seen about homotransplants in rabbits.

The rabbit seems to be relatively better soil for the growth of guinea pig kidney than is the guinea pig for rabbit tissue.

In comparing homotransplants and heterotransplants one must take into consideration the general reactions which constantly differentiate the reactions about homotransplants from the reactions about heterotransplants the individual reactions of the animals serving as host and the special action or activity of the transplanted tissue.

Fleisher found no evidence in the experiments that the leucocytic and connective tissue reactions are the factors of greatest importance in the poorer growth of heterotransplants but is inclined to believe that while these reaction may have some effect the body fluids through either the presence of injurious substances or the lack of substances necessary for the growth of the heterotransplant are more important.

GEORGE F. BEILBY

In subsequent investigations Loeb established a connection between the duration of life and the intensity of mitotic proliferation of the transplanted tissue on the one hand and the species relationship between tissue and host into which it was transplanted on the other hand. The author found that the tissues remained longer alive and showed a greater cell proliferation after homotransplantation than after transplantation into other species. Again after heterotransplantation there was noticeable a correspondence between the degree of relationship of the species whose tissues were used for transplantation and of the species into which they were transplanted on the one hand and the length of life and mitotic proliferation of the transplanted tissue on the other hand. After transplantation into nearly related species the result was better than after transplantation into more distant species.

Loeb furthermore found that while after transplantation of epithelial tissues into the same species lymphocytes played a significant part in the destruction of the transplanted tissues the death of the tissues after transplantation into foreign species was essentially due to the inadequacy between the transplanted tissues and the body fluids of the host.

The author carried out two sets of experiments. In the first one he used rats and in the majority of the experiments simultaneously transplanted various tissues into the same individual. In the second set he transplanted thyroids in guinea pigs.

In summarizing Loeb makes the following statement:

1. Tissues transplanted from parents to children or from children to parents or between sisters and brothers behave in a manner intermediate between tissues after homo and autotransplantation.

2. The difference between results obtained after transplantation from parents to children and after transplantation of tissues among sisters and brothers is so small that it may be entirely accidental. Tissues transplanted from children to mother also show an intermediate behavior although the animals in which pieces were destroyed were relatively more numerous in this series. This result may also be accidental and due to the relatively small number of mother rats used.

3. The different pieces transplanted into the same animal on the whole agree with others in their state of preservation. While in certain cases accidental factors interfere the results obtained in different individuals are essentially the expression of constitutional differences in the chemical structure of the individuality differentials in these animals.

4. All degrees of variation between the two extremes of results resembling those in autotransplantation on the one hand and of homotransplantation on the other hand are obtained after transplantation of tissues into near relative. A half way condition is not found. The different members of a family may behave very differently. It is as yet doubtful whether even the best results obtained

Loeb L. The Grafting of Tissues into Nearly Related Individuals in the Rat and the Mode of Inheritance of Individuality Differentials.
J. Med. Research 9 5 11 393

Loeb's studies on the differences between auto and homotransplantation suggested to him a connection between transplantability of tissues and tumors and the biochemical relationship of individual. Conversely it showed that the relationships between constituents of the blood plasma and of the body cells (tissue corpuscles) could be used as a test for species of generic specificity and these two sets of facts were correlated on various occasions.

after transplantation into near relatives are quite as good as those obtained after autotransplantation or quite as bad as after homotransplantation. It is doubtful whether the two extremes are reached. But after transplantation into near relatives an animal is found in which the transplanted tissue approaches the condition observed after auto- and homotransplantation.

In different series the maximum of the lymphocytic reaction reached in Group C and decreases in the direction toward A as well as toward D. The lymphocytic reaction increases with the increasing unfavorableness of the host for the transplanted tissue and with the degree of injurious action of the host on the transplanted tissue. This however holds good only until a certain maximum has been reached in Group C. If the destruction progresses still further and no or only very little lymphangioecyema is left the lymphocytic infiltration again decreases.

If one compares the result thirty days with the forty-seven days after transplantation a noticeable deterioration is evident in the preparation of the tissues at the later period. It may be concluded that after transplantation into near relatives the state of preservation of the transplanted pieces progressively deteriorate. It thus becomes very probable that in the large majority of cases the tissues will be sooner or later destroyed after transplantation in near relatives and that while they will usually live longer than after homotransplantation they will in most cases not live as long as after autotransplantation. From a practical point of view tissues of near relatives can therefore usually not take the place of the tissues of the same individual although generally they will give better results than tissues taken from an unrelated individual of the same species.

Innateness of the host animals exerts a all probability an unfavorable influence on the state of preservation of the transplanted pieces.

The chemical characteristics which differentiate all the tissues belonging to one individual from all the tissues belonging to other individuals including near relatives and which are common to all or almost all the tissues of the same individual may be called individual differentials. The author has shown that the individuality differential is not inherited according to the rules of alternation mendelian heredity of simple monohybrid characters but that all degrees of blending are observed. One may conceive of all gradations from individuality differential to differentials in near relatives in members of the same strain and the same species and ultimately of different though nearly related species as corresponding to gradually increasing quantitative differences in the same substance present in the majority of the tissues of the same individual. The inheritance of these individuality differentials is distinct from the inheritance of other characters of organs and tissues. Both may follow the rules of heredity. GEORGE E. B. V.

Jonas F. S. Stiles, n. Boine Mastitis. N. n. Hemolytic streptococci in inflammation of the udder. J. E. P. M. d. 98. 1. 49.

This study was undertaken to define more accurately the species of organism responsible for diseases of the mammary glands of cows and if possible to lighten the economic burden imposed upon dairymen by these afflictions. In addition a more complete description of the biological characters of bovine streptococci obtained from inflamed udders seems desirable for the purpose of assisting in the public problem of milk-borne epidemics of tonsillitis.

Much of the material has been obtained from a large dairy herd Mastitis as more or less endemic. During 1916 it was necessary to dispose of 65 cows because of chronic mastitis. In addition to the actual loss from chronic cases many animals developed foci of the disease generally evidenced by floccul in the milk and inflammation of the gland. Milk from such quarters was discarded and represented an absolute loss. It is interesting to note that during 1916 the number of animals disposed of because of chronic mastitis doubled the number reacting to tuberculin. It has also been possible to obtain clinical data and samples of milk from other sources.

The following routine procedure is used in obtaining milk from inflamed udder. Milk from the affected quarter is drawn directly into a sterile ounce wide mouthed bottle and except in winter it is placed at once in a refrigerator. The animal is then milked and the appearance of the milk of the quarter. The animal's herd number and its location in the various barns is recorded. The milk is usually plated within a few hours in dilutions of 1:100 and 1:1000. Culture medium employed in all milk examinations consists of 1 cc of defibrinated horse blood and 2 cc of 1 per cent yeast bouillon agar. Each is added to the diluted milk and the whole plated. The effect on hemoglobin is noted at the end of 4 and 48 hours. Regarding the days made from deep colonies.

From this study the author seems to have clearly established that non-hemolytic streptococci are responsible for a considerable number of cases of bovine mastitis. Of the 8 animals examined 31 were suffering from infections of this type. The lesions produced in the infected quarters varied from an inflammation of only the lining epithelium of the large ducts to even degeneration and necrosis of the secreting epithelium. In one instance a considerable proportion of the glandular elements had been replaced with connective tissue.

The streptococci fall into two groups when the reaction on the various carbohydrates is considered. Thirty-four strains fermented dextrin, lactose, sucrose, maltose and salicin five others attacked the first four sugars but failed to produce acid in salicin. All most of the streptococci failed to act upon raffinose and inulin. From the specimen isolated from a mammary abscess produced and in all the carbohydrates.

All the strain were agglutinated with an antiserum prepared from one typical strain. The agglutination titer varied over wide limits although all the streptococci were agglutinated at a dilution of 1,000. None of the strains inoculated proved pathogenic for rabbits. A pig fed on the milk from two typical case of mastitis remained well. (GEORGE E. BEILAN)

ROENTGENOLOGY

Brown P. and Young J. S. Clinical Observations in Military Roentgenology. *Am. J. Roentgenol.* 1918, 40.

The localization of foreign bodies constitutes by far the greatest part of the surgical roentgenology at the military stations. Speed was a prime essential and for this reason the simplest methods consistent with accuracy were employed. A simple parallel method or an equally simple displacement method such as the Strohl were found to answer the requirements in most of the cases.

Foreign material injected into the wound for the purpose of producing antiseptic action was found at times to interfere materially with proper localization of foreign bodies. Thus the so-called bismuth iodoforn paraffin paste of Mori on casts distinct shadows which at times obscured the foreign body or closely resembled such shadows. It was usually possible to dissociate the respective shadows by movement either of the subject or of the tube. Other extraneous factors such as Carrel tubes were found at times to offer difficulty in differential diagnosis by roentgen rays. The inclusion and exclusion of second

ary rays was utilized to advantage at times to determine the presence or absence of a foreign body in any given field. (ADOLPH HARTUNG)

HOSPITAL MEDICOLEGAL AND MEDICAL EDUCATION

Bradford F. H. The Need of Systematic Teaching of Hospital Internes. *Boston M. & S. J.* 1918, lxxix, 2.

The government need well qualified young physicians and demands a year of hospital service. This secures to the hospital a certain supply of young medical officers.

In return the hospital should arrange that residents receive systematic instruction during their year of service which demands:

1. Systematic instruction from the hospital authorities and staffs.
2. Authorized conferences on hospital cases.
3. Condensed and systematic case records.
4. An arrangement of hours of work permitting time for study.
5. Co-operation on the part of hospital authorities with medical educators and supervision by state licensing boards of medical education to secure proper hospital standardization.

The demands of the community for properly trained medical practitioners require hospital training in addition to adequate medical school instruction. This throws upon hospitals an added responsibility that is the maximum of hospital educational opportunity.

MILITARY SURGERY

NOTE.—Reader are referred to the Table of Contents for other articles dealing with military surgery which appear under the various headings according to our anatomical arrangement.

Robinson F. W. Suggestions for the Treatment of Septic Wounds. *B. M. J.* 1918, 1.

As a result of much work and research at the front it has been conclusively proven that owing to the condition of the soil wounds are infected from the first. It has also been shown that modern germicides on account of their low penetrating power are unable to reach the infected areas which lie in the lacunar spaces beneath and outside the wound itself.

As a result of these researches the physiologic treatment of wounds by irrigation has largely superseded the older methods. This treatment however cannot be applied in the very earliest stages when it is so necessary. As a consequence gangrenous and septic processes have already begun in the wound before irrigation can be applied. This accounts for the large number of unhealthy and adherent cicatrices with their resulting disability. Whatever treatment is adopted must be prompt and should aim at reaching in the earliest stage the outlying infected areas. It would seem that

to throw around these infected areas a circle of bacterial serum would most nearly approach the conditions required and would best anticipate the irrigation which is to follow.

In South Africa the author adopted a crude but effective method. He grasped the wound with the left hand well beneath its base at the same time drawing it well forward and making the thumb and fingers compress the tissues tightly. He then transfixed with a needle entering the point immediately beneath the tips of thumb and fingers. In a similar manner he transfixed the tissue about an inch beyond each end of the wound taking care to include the same depth of tissue. He then passed a rubber ligature around the wound beneath the needles. This was tightened to the desired extent and fixed by a clip.

The instrument consists of two slender looped splints a system of wormed needles with detachable points and nuts. In this way the splints are made to approximate each other and so compress the intervening tissues. By transfixing the tissues

an immobility is obtained in an easy manner. The edges of the wound are quite flaccid and tend to fill together. In the compressed area the circulation is controlled and easily regulated. The physiologic engorgement ensure a flooding of the basal areas with bricetral serum and the infected interstices and launage in this way reached. One effect of compressing a circumscribed area of tissue will outside the margins and base of the wound to elvate unfold and flatten out both the basal and other parts of the wound itself. The base of the wound is thus rendered more superficial and adaptable for any surgical treatment. The lymphatic spaces are opened out and easily reached.

When there is a wound in the area at the base some modification is required and the ligature in these cases play the most important role. Small portions of tissue are punched up and transferred and retained by small splints. An encircling suture is thrown around the wound passing beneath the needles and drawn tightly.

This method of handling a wound permits a complete toilet. The bactericidal serum enhances the defensive properties of a wound. During the progress of healing the perfect immobility of the compressed area gives the best conditions for the building up of healthy scar tissue.

The practice of packing a wound with an absorbable dressing a familiar example of the continued disturbance of growing granulations where such dressing is removed. This means delay. Any dressing to be applied to a gulating wound should possess three qualities. It should be absorbent so that the plastic lymph could be held in its mesh for nourishment of the improving plasma cells also viable so that the dressing could yield and gradually be replaced by new tissue perforated so that drainage could be obtained in the early stage and the graft thus be enabled to adhere to the granulations. Otherwise the dressing liquefies and prematurely absorbed.

For the development of perfect scar tissue absolute rest in the healing zone is necessary. A healthy scar should be smooth elastic free from adhesions and non contractile. V. C. H. T.

Bar W. S. Primary and Delayed Primary Suture in the Treatment of War Fractures. J. O'H. p. 5. g. 98. 53.

The indications and results of primary and secondary suture in the treatment of war fractures are considered and the author states that the principles have been established on certain grounds. All war wounds are considered infected. Pro-

jectiles of things and devitalize the tissue should be removed in at least twelve hours. The surgeon, the radiologist and the bacteriologist should all work in harmony. The radiograph is taken upon entrance into the hospital the fracture described and the projectile located. The bacteriologist determines the type of organism the surgeon must be able to do clean surgery. The handling of the tissues reduced to a minimum.

Primary suture is successful in from 80 to 95 percent of cases. Obvious reasons are given for the employment of this method. About 10 percent of wounds even though they arrive in the first twelve hours cannot be closed because of shock, size of the wounds, lack of X-ray apparatus, failure to locate the projectile or great loss of substance.

Delayed suture is done in those cases where primary suture could have been accomplished except for reasons generally military. The technique is the same except that the skin edge is not brought together until ten or eleven days later. Primary suture cases must be kept at the place of operation for at least ten days. Delayed suture cases can be sent to the rear six or seven hours after operation then closed on the third or fourth day with 80 to 8 percent of cures.

The author points out the great advantage of converting a compound infected fracture into a simple one which is the key note of primary and delayed suture. The infection of the bone is most often through the soft parts but with this method as high as 89 percent of the infected compound fractures have been changed into simple aseptic fractures. The author strongly advocates teamwork and constant consultation for the proper carrying out of this technique. C. C. C. TERT.

Scruton W. A. Examination of Applicant for Aviation Service U. S. Army Disqualifying Factors in 1500 Cases. J. O'H. p. 5. g. 98. 58.

The author presents a record card showing the various reasons for rejection. Of 304 flyers examined 54 or 38 percent were rejected. Only 1 out of the 304 flyers were rejected for failure to respond correctly to the rotation tests.

The author lays stress upon the careful attention to the minutest detail relative to technique stating that the cause of cross pointing and divergent pointing is absolutely an improper position of the head during rotation. The flyer must have a perfect aural mechanism perfect vision no fundus changes excellent hearing and lun sound teeth and no form of hernia. Otto M. Korr.

GYNECOLOGY

UTERUS

Watson B P Cancer of the Cervix Complicating Triplet Pregnancy *Int J Obst & G* 1918 **14** III 34

The author reports the case of a woman aged thirty para V who had nothing in her obstetrical history worthy of note. She entered the hospital in the fifth month of pregnancy. Her last regular menstrual period occurred January 3 1917. Until the first week of March there was no vaginal discharge of any kind but from that time until her admission to the hospital she lost blood more or less continuously. The flow was more marked when she was moving about. It was sometimes bright red sometimes dark in color. Clots were often passed and for the month previous to admission a foul purulent discharge had been present. She had noticed the abdomen enlarging and had felt foetal movements for two weeks prior to admission.

The cervix was large the posterior lip smooth the anterior lip eroded the surface friable the canal lightly patulous and admitting the finger. Friable tissue could be felt extending up the anterior wall of the cervical canal. It bled readily on examination. The Wassermann test was negative.

At operation the uterus was found to be larger than had been expected very soft and fluctuating. The uterus was opened in the middle line. On rupturing the membranes one fetus was delivered then another was felt and delivered and finally a third. The fetuses were apparently about the fifth month. As one placenta was bulging through the opening all the placental tissue and membranes were removed and the opening in the uterus closed with a few interrupted sutures. The Wertheim operation was then proceeded with. The patient made a rapid and uneventful recovery and was discharged six weeks after operation.

Another case of cancer of the cervix is reported in a woman aged thirty two para V who was five months pregnant. A Wertheim operation was done. Six months later the patient died following a nephrectomy due to obstruction by cancer causing hydronephrosis.

EDWARD I CORNELL

Brown L A Study of 1500 Selective Cases of Myomata Uteri Operated upon at the Woman's Hospital 1910 to 1917 *Int J Obst & G* 1918 **14** III 410

As a result of the operations 25 patients died of these 7 died from embolus chiefly between the eighth and twentieth day 7 died from peritonitis and the remainder from various causes. The percentage rate is 1.86. Sixty six malignant conditions were found of which 9 were unquestionably

determined before operation. There were 58 cases of associated ovarian pathology. There were 265 cases of associated tubal disease the majority of which would have required surgical interference at some time. Tubercular endometritis was present in two instances and in 103 myomata necrotic or calcareous changes were present. One hundred and sixty seven chronic or subacute inflammatory appendicities were found. There were 9 instances of associated extra uterine pregnancy and 51 of normal pregnancy. Of the 1500 consecutive myomata operated upon 23.7 per cent contra indicated the use of radium and X ray.

Any myoma needing interference that cannot be completely mapped out by bimanual examination and known to be free from coincident complications should have surgery advised unless there is a decided physical contra indication as in heart lung or kidney disease or in any other condition present making a bad surgical risk.

EDWARD I CORNELL

Schmitz H The Treatment of Certain Hemorrhages of the Uterus with Radium and Roentgen Rays *Med & Surg* 1918 II 14

In 643 consecutive gynecological cases that came under the author's observation at the Willard and St. Mary's hospitals 135 or 21 per cent were accompanied by uterine hemorrhage due to an underlying genital disease.

Fifty six out of these 135 cases were characterized by a proliferation of uterine tissue. Thirty two or more than one half of the 56 were caused by new growths and of these 19 were the result of carcinomatous formations. If to these 56 cases are added the 6 cases of hemorrhagic metropathy or essential hemorrhages a total of 62 cases is obtained which formerly indicated repeated curettages and finally hysterectomies to relieve the patient. The cancers and myomata of course were always extirpated if operable.

If in essential uterine hemorrhages and hyperplasia of the endometrium and myometrium medicinal and local mechanical treatment or repeated curettage do not bring about cessation of the hemorrhages actinotherapy is indicated.

The use of radium is preferable to that of the X ray. One hundred and eighty nine cases of uterine hemorrhages were subjected to treatment with radium and roentgen rays. The indications were pains takingly observed. In 126 cases the hemorrhage resulted from malignant disease of the cervix in 3 from cancer of the corpus in 15 from myomata in 30 from hemorrhagic myopathies and myomatous uteri and in 6 cases from chronic catarrhal endometritis.

Several cervical and corporeal cancers have re-

an immobility is obtained in an easy manner. The edges of the wound are quite flaccid and tend to fall together. In the compressed area the circulation is not impeded and easily regulated. The physiologic engorgement ensures a flooding of the basal areas with bacterial serum and the infected interstices and lacunae are in this way reached. One effect of compressing a circumferential area of tissue well outside the margins and base of the wound is to elevate, unfold and flatten out both the basal and other parts of the wound itself. The basal part of the wound is thus rendered more superficial and dependable for any surgical toilet necessary. The lymphatic spaces are obliterated and easily reached.

When there are tendons and tendons at the base some modification is required and the ligature in the case plays the most important role. Small portions of tissue are punched up and tanned and retained by small plant anesthetic ligatures is thrown around the wound passing beneath the needle and drawn tightly.

This method of handling a wound permits a complete toilet. The bactericidal serum enhances the defensive properties of a wound. During the progress of healing the perfect immobility of the compressed edges of the wound is not possible for the building up of healthy scar tissue.

The practice of packing a wound with an unabsorbable dressing is a mistake. The use of the unabsorbable dressing of granulations here is a hindrance. The removal of the dressing is delayed. Any dressing to be applied to granulating wound should possess three qualities. It should be absorbent so that the plastic lymph could be held in it. It must be non-irritant to the granulating plasma cells. It should be absorbent so that the dressing could yield a fully replaceable by new tissue perfected so that drainage could be obtained in the early stage and the graft thus be enabled to adhere to the granulations. Otherwise the dressing is liquefied and prematurely aborted.

For the development of perfect tissue absorption the healing zone is necessary. A healthy scar should be smooth elastic free from adhesions and non-irritant. A. C. HUNT

Barry W. S. Primary and Delayed Primary Suture in the Treatment of War Fractures. J. Orthopaedic Surg. 1918, 3, 1

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jectiles clothing and devitalized tissue should be removed in at least twelve hours. The surgeon, the radiologist and the bacteriologist should all work in harmony. The radiograph is taken upon entrance into the hospital the fracture described and the projectile located. The bacteriologist determines the type of organism the surgeon must be able to do clean surgery. The handling of the wound is reduced to a minimum.

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The author points out the great advantage of controlling a compound infected fracture into a simple one which is the key note of primary and delayed suture. The infection of the bones is most often through the soft parts but with this method as high as 85 per cent of the infected compound fracture have been changed into simple accepted fracture. The author strongly advocates teamwork and constant consultation for the proper carrying out of this technique. C. C. CLARK

Sutton W. A. Examination of Applicants for Aviation Service U. S. Army. Disqualifying Factors in 1500 Cases. J. Orthopaedic Surg. 1918, 3, 8

The author presents the record card showing the various reasons for rejection. Of 364 flyers examined 54 or 14.8 per cent were rejected. Only 21 out of the 1364 flyers were rejected for failing to report correctly to the rotation tests.

The author stresses upon the careful attention to the minutest detail relative to technique stating that the cause of crop-rotting and divergent position is absolutely an improper position of the head during rotation. The flyer must have a perfect aural mechanism perfect vision no fundus changes excellent heart and lungs sound teeth and no mof hernia. Orr, M. Ro.

GYNECOLOGY

UTERUS

Watson B. P. Cancer of the Cervix Complicating Triplet Pregnancy. *Am J Obst & G* 1918 lxv 34

The author reports the case of a woman aged thirty para V who had nothing in her past obstetrical history worthy of note. She entered the hospital in the fifth month of pregnancy. Her last regular menstrual period occurred January 3, 1917. Until the first week of March there was no vaginal discharge of any kind but from that time until her admission to the hospital she lost blood more or less continuously. The flow was more marked when she was moving about. It was sometimes bright red, sometimes dark in color. Clots were often passed and for the month previous to admission a foul purulent discharge had been present. She had noticed the abdomen enlarging and had felt fetal movements for two weeks prior to admission.

The cervix was large, the posterior lip smooth, the anterior lip eroded, the surface friable, the canal lightly patulous and admitting the finger. Friable tissue could be felt extending up the anterior wall of the cervical canal. It bled readily on examination. The Wassermann test was negative.

At operation the uterus was found to be larger than had been expected, very soft and fluctuating. The uterus was opened in the middle line. On rupturing the membranes one fetus was delivered, then another was felt and delivered and finally a third. The fetuses were apparently about the fifth month. As one placenta was bulging through the opening all the placental tissue and membranes were removed and the opening in the uterus closed with a few interrupted sutures. The Wertheim operation was then proceeded with. The patient made a rapid and uneventful recovery and was discharged six weeks after operation.

Another case of cancer of the cervix reported in a woman aged thirty two para V who was five months pregnant. A Wertheim operation was done. Six months later the patient died following a nephrectomy due to obstruction by cancer causing hydronephrosis. EDWARD I. CORNELL

Brown L. A Study of 1500 Selective Cases of Myomata Uteri Operated upon at the Woman's Hospital 1910 to 1917. *Am J Obst & G* 1918 lxv 40

As a result of the operations 8 patients died of the embolus, died from embolus chiefly between the eighth and twentieth day, died from peritonitis and the remainder from various causes. The percentage rate is 1.86. Sixty six malignant conditions were found of which 9 were unquestionably

determined before operation. There were 58 cases of associated ovarian pathology. There were 65 cases of associated tubal disease, the majority of which would have required surgical interference at some time. Tubercular endometritis was present in two instances and in 105 myomata necrotic or calcareous changes were present. One hundred and sixty even chronic or subacute inflammatory appendices were found. There were 9 instances of associated extra uterine pregnancy and 51 of normal pregnancy. Of the 1500 consecutive myomata operated upon 3.1 per cent contra indicated the use of radium and X ray.

Any myoma needing interference that cannot be completely mapped out by bimanual examination and known to be free from coincident complications should have surgery advised unless there is a decided physical contra indication as in heart, lung or kidney disease or in any other condition presenting a bad surgical risk. EDWARD I. CORNELL

Schmitz H. The Treatment of Certain Hemorrhages of the Uterus with Radium and Roentgen Rays. *Med & Surg* 1918 14

In 643 consecutive gynecological cases that came under the author's observation at the Willard and St. Mary's hospitals 135 or 21 per cent were accompanied by uterine hemorrhage due to an underlying genital disease.

Fifty six out of these 135 cases were characterized by a proliferation of uterine tissue. Thirty two or more than one half of the 56 were caused by new growths and of these 19 were the result of carcinomatous formations. If to these 56 cases are added the 6 cases of hemorrhagic metropathy or essential hemorrhages a total of 62 cases is obtained which formerly indicated repeated curettages and finally hysterectomies to relieve the patient. The cancers and myomata of course were always extirpated if operable.

If in essential uterine hemorrhages and hyperplasia of the endometrium and myometrium medical and local mechanical treatment or repeated curettage do not bring about cessation of the hemorrhages actinotherapy is indicated.

The use of radium is preferable to that of the X ray. One hundred and eighty nine cases of uterine hemorrhages were subjected to treatment with radium and roentgen rays. The indications were pains, takingly observed. In 16 cases the hemorrhage resulted from malignant disease of the cervix in 3 from cancer of the corpus in 15 from myomata in 39 from hemorrhagic myopathies and myomatous uteri and in 6 cases from chronic catarrhal endometritis.

Several cervical and corporeal cancers have re-

mainly followed a period of four to five years. Yet it was evident that the results of radium and roentgen ray therapy a palliative and only a few cases curative. Hemorrhage pain and discharge a temporarily arrested. Thirteen of the 13 case of myomata uteri were permanently relieved the tumor disappearing within six to nine months in all but a few of the case.

EDWARD L. CORTELL

Crutcher H. T. Control of Hemorrhage in Vaginal Hysterectomy. *Medical* 98 5

The control of hemorrhage in gynecological surgery is accomplished by a clamp which is long and somewhat elastic and of a length many times beyond that may be supposed to be sufficient. It is necessary of the case. The blood of the lamp must be long enough to enter the broad ligament at one grasp broad that the tissues may not be cut by its application and elastic that no subsequent slipping may be possible through the hands of the pedicle.

The clamp has a to gauge and groove blade. The lock is made up of a ring which helps to grasp in the outer side of the handles.

The clamp is allowed to remain for twenty-four hours. EDWARD L. CORTELL

N. Bury F. P. and Doll A. H. The Mental Disturbance in the Stagnation of Menstrual Discharge. *Medical* 98

Modern classification of mental disorders recognizes no form of properly classified character mental disorder. The form of psychosis is usually dependent upon neurotic inheritance and history of neuroses and of form mental disorder. In frank psychosis over one half have a neurotic heritage. Psychoses occur more frequently in married women but widow and single women who have been active business or professional life are quite prone to the disorder. It is not the hard work but the stress the changed circumstances the emotional shocks the disappointments and realization of the passing years etc. operating under the stress of the involuntarily period that bring about the psychosis.

Exhaustion is quite common at this period even to those who have withstood acute illness child birth accidents etc. only to have the involuntary changes lower the mental threshold sufficiently to precipitate a psychosis. This is more apt to occur where the prodromal period has lasted over several months and has been recognized.

Again the form of the mental disorder may be purely a symptomatic depression but the most common form is involuntarily melancholia of which in women the menopause is the most important factor. While every depressed patient is potentially suicidal yet in involuntarily melancholia this feature must be warned against by the physician from the very beginning.

The duration is largely dependent on the early

recognition that something is wrong. The prodromal period with sleep disorders insomnia delirium etc. should be the guide of the boding dangers. Nervous exhaustion is the usual diagnosis and diversion rather than rest is the usual prescription both by physicians and patients. Not infrequently a surgical operation is suggested to meet a surgical condition but with the hope that the surgical pathology is the basis of the depression on both physical and mental. The mental pathology is in most such cases been overlooked and when recognized proper treatment of psychosis is more apt to be the diagnosis than the consideration of postoperative phenomena as purely psychogenic. The real psychosis began long before operation and thought of.

Slightly the psychosis develops and slowly recedes to its place. One to three years is the usual duration with the average and intensive treatment about eighteen months. It is rare that it lasts less than a year.

Proper treatment and care with its organic service is an absolute need to meet all of the conditions indicated in the proper treatment of the psychogenic form of menopause.

EDWARD L. CORTELL

ADNEAL AND PERIUTERINE CONDITIONS

T. Glaucio N. T. C. S. of Menstrual Abdominal Fula. *Medical* 98 6

The author gives particulars of two cases of menstrual abdominal distension. The first case observed by Gutierrez. The only other case which the author can trace in literature as reported by Bello in 1915. In the cases of Bell and Gutierrez the abdominal distension an inevitable result of the necessity of draining suppuration collected in the lower pelvis obliging the operation to incise the abdominal wall. This ultimately led to the formation of a fistulous tract connection with the utero adnexal suppuration.

In the author's case the patient had undergone a left oophorectomy for suppurative adnexal cysts. This was followed by the appearance of an abscess in the lower extremity of the incision. The patient returned to the hospital for treatment. The abscess was incised but did not cicatrize and the suppuration continued with an abundant flow of blood during the menstrual periods in addition to the uterine flow.

A median infraumbilical laparotomy was done. The stump of the left tube was found adherent to the abdominal wall and this was in the author's opinion due to defective technique during the laparotomy. Not only had the interstitial portion of the tube been left but also a large part of the internal extremity and owing to failure of peritonization this led to the continuation of adhesions.

between the stump and the abdominal anterior wall. Later infection completed the work of fistulization.

The author states that the case shows that simple ligation and section of the internal extremity of the tube ought to be discontinued and preference rather given to those methods which in a total salpingectomy not alone assure complete extirpation but also peritonization of the bleeding surfaces. This is effected by the V incision in full uterine tissue as Webster has shown or by conical form resection or even by plastic procedures. The necessity for some such process is manifest since failure of peritonization of the stump may give rise to other serious infectious peritoneal complications. W. A. BRENNAN.

Warner F. Conservative Surgery in Operations upon the Fallopian Tubes with Reference to Future Pregnancies. Report of Two Cases.
Med & Surg 1918 11 731

If tubes of gonorrheal origin usually seal the fate of a woman's future pregnancies. Pus tubes due to other germ origin as the streptococcus following abortion are perhaps less likely to interfere with a possible pregnancy. In young women without children it is preferable not to disturb the tubes unless the menace of purulent inflammation presses the surgeon to an operation.

If an operation is undertaken a sufficiently conservative operation should be done which will make it possible for pregnancy to occur if the salpingitis be in a young woman. In older women with children pus tubes from whatever cause should be removed.

If the pus tubes are due to gonococci as they usually are and the uterus is enlarged and evidently involved in the same type of inflammatory disturbance as the tubes a total or partial hysterectomy should be made.

An ectopic pregnancy occurring in a young nullipara should call for the removal of the one tube. An ectopic pregnancy occurring in a multipara should call for the removal of both tubes for both are probably divested of their ciliated epithelium which will render probable a like pregnancy occurring in the remaining tube. EDWARD L. CORNELL.

Curtis A. H. The Bladder of Women After Operation.
Ann J Obstet N Y 1918 14 VIII 30

This paper is a consideration of postoperative bladder disturbance with special regard to treat-

ment based on a study of this subject in the care of 465 cases operated upon within the preceding eighteen months. Of these cases 13 were abdominal 188 vaginal and 64 combined abdominovaginal cases.

Of the abdominal cases 135 were not catheterized and possessed normal bladder function. Seventy-eight were catheterized 11 of which were so treated many times. The author refers to these 11 as most instructive. Almost without exception their bladders after re-establishment of spontaneous micturition yielded residual urine when tested. This residual urine decreasing in amount almost daily with the return to normal within a week. Where patients were not tested for residual urine after prolonged catheterization pus usually appeared in the urine with symptoms of cystitis. It would seem that no course of procedure is more pernicious than that of regular use of the catheter over many days followed by abrupt cessation of all catheterization on the assumption that as soon as the patient begins to void the power of thorough evacuation has returned.

Of the 188 vaginal operations 138 patients were not catheterized and had apparently normal bladder function. Fifty patients were catheterized 14 but once or twice 36 more often. Residual urine was found to be present here as in the previous group, oftener where the bladder had been directly involved in the operation 11 e. transposition cases vaginal hysterectomy etc.

The third group of cases 64 in all served to emphasize the same points with respect to residual urine upon the resumption of spontaneous urination after prolonged catheterization.

Stasis of urine therefore is believed to be the chief cause of bladder troubles after operation. Treatment has been based upon avoidance of urine stagnation. The result has been that postoperative urinary tract infections have disappeared since the institution of this principle of treatment.

There are many cases of functional inability to completely empty the bladder. This is notably true of the bladder of pregnancy. Through judicious catheterization immediately after urination it is believed that these patients often can be saved from the dangers of pyelitis of pregnancy. A similar treatment of the failing bladder of tubal at a time when moderate function still remains promises much help if combined with intensive antiseptic therapy. CAREY CULBERTSON.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Deacon M A S. Tlought on the Employment of Pregnant Women in Munition Factories
L c t L d 98 c 3

The factory from which the following report was compiled is built on the site of a farm in fl t open and well drained fields. The e is an abundance of fresh air and sunshine. All the buildings are airy well ventilated with cross and end to end through draughts and the sanitary and bath accommodations in excess of the Home Office requirements. The factory is particularly well managed.

The factory is situated a mile from the railway and tram terminus and all workers have facilities to walk this mile as there is no other way of reaching their work.

Of the 100 pregnant women 46 cases terminated successfully with a child enlifered the end of February 1918 when this report was made up. One woman had twins 7 cases could not be traced but were in good condition when the last head of 30 cases had not entered labor at the end of February but of these 9 have terminated successfully.

There were 2 premature births and 3 early abortions that started before the third month of pregnancy. Of the 2 premature cases, one had labor terminated advanced carcinoma of the cervix at five months and the other contracted syphilis at month the baby being born dead at eight months.

The 13 miscarriages are all very early from five to ten weeks. Of the one patient fell out of bed and miscarried three days later and the fellow don't start a third had tuberculous trouble and a few of the previous miscarriages.

It is possible that some births do not appear in this report as women may have had confinements without reporting their condition. It is highly unlikely that there have been miscarriages than recorded as all workers who are absent for three days consecutively are visited at their homes and inquiries made into the reason for such absence so that miscarriage could hardly escape notice by reason of this factory regulation.

Records are still being kept of such cases and since the workers do not fear dismissal and know that an interest is taken they willingly give information of their condition. Thus they are kept under observation even after they leave with the result that next year's record will be more complete than those for the nine months to February 1918. All the women seen since confinement report that they have had easy labor, healthy children and that their physical condition during pregnancy was excellent.

One woman who worked until ten days before her confinement bore her first healthy baby out of eight. Another has had twelve pregnancies but only one other living child. A third had passed on other children and thus lost the healthiest. All the women found the work to be beneficial and never felt overworked.

EDWARD L. C. RYAN

Piccardo T. J. The Ovula Theory in the Etiology of Extrauterine Pregnancy (Lancet) 1918
Lancet 1918 107 113
Rat 1918 107 113

The generally accepted opinion is that tubal development of the fecundated ovum as a consequence of detentation in its normal progress owing to stenosis of the duct from pathological or congenital conditions led the author to investigate whether this is really the casual factor. In 1903 he published work which he maintained that tubal conditions are only secondary factors and that the tubal infection of the ovum is clearly an ovular phenomenon dependent upon actual alteration in the ovum itself.

The present article is an analysis of the author's further studies and recent observations by others. From this study the following conclusions are drawn.

1. The embryo takes place in the intratubal position. The ovum, whether dated or not, is the embryo of the tubal like the uterine embryo. The embryo protects these organs and the peritoneal sac.

2. The intratubal migration of the embryo due to peritubalitis of the tube and the infection of the mucus segregated by cell undergo epithelial transformation.

3. By the passage of the ovum into the mucus of the tube undergoes a gradual transformation which renders the nucleus of the ovum palpable.

4. If the nucleus is not affected it becomes there is synchronism between the ovular transformation of the ovum at the time of the arrival of the ovum at the uterine cavity.

5. When an atopic infection does occur the synchronism is due to the premature development of the trophoblast due to the exaggerated growth of the trophoblast.

6. It is probable that this exaggerated genetic process is not alone of ovular origin the corpus luteum contributes to it or it may be helped by simple functional disturbances or by structural alterations of inflammatory origin.

7. Ectopic pregnancy is frequently seen to occur in women with apparently healthy genital organs.

9 The inflammatory processes caused by the mucosa are unfavorable to tubal impregnation of the ovum except in cases when the alteration is very slight and permits the mucosa to recover its normal characteristics W A BRENNAN

Altman J T Toxæmias of Pregnancy *J Irish Soc Hyg* 1918 1 45

In this article the author discusses the origin cause and symptoms of toxæmia of pregnancy. Toxæmia means that the blood contains poisons of probably alkaloid nature or substances similar to them. These toxins are supposed to be derived from two sources maternal and foetal. Maternal toxins are those arising from morbid or deficient processes occurring in the liver kidneys thyroid and perhaps others of the ductless glands. Those of foetal origin are supposed to be derived from waste or by products of the foetus or of the placenta. These toxins of whatever nature are retained in the body of the mother or they are not sufficiently oxidized to render them harmless or easy of elimination.

While the author is of the opinion that every pregnancy is attended by a certain amount of auto-intoxication the constitution of a perfectly normal woman meets these demands without external symptoms or signs of disease. Predisposing causes of this condition are nausea neurasthenia anaemia and predisposing disorders of the kidneys liver intestinal tract etc. The symptoms of the milder cases are characterized by headaches dizziness spots before the eyes irritability oedema nausea and vomiting constipation and in some cases diarrhoea and disturbed kidney action.

The author makes it a rule to impress upon his patient the importance of reporting the above symptoms and he points out to them the danger signals namely severe frontal headaches spots before the eye and severe or persistent epigastric pain. General examination of these patients usually shows evidence of deficient elimination muddy skin dry coated tongue reddened gums pulse or low tension tympany and tenderness over the liver.

Pathologic anatomy of these cases is not very instructive as they are not often fatal. Treatment is symptomatic C D HOLT

Titus P Uterine Inertia Summary of a Series of Cases *J Hyg* 1918 1 189

The distinction between uterine inertia and uterine exhaustion is sharp since the contractions of the uterus in the former condition are inherently ineffective while in the latter condition their force has been spent against some obstacle.

According to this distinction based on etiology it is incorrect to call the former condition primary inertia and the latter secondary inertia.

Differentiation between inertia and exhaustion is important from the standpoint of treatment that of the former being more or less expectant while

that of the latter should be prophylactic and directed against the obstacle to delivery.

True inertia begins in the first stage of labor. If the membranes are unruptured the treatment consists in the use of mild uterine stimulants alternating with periods of rest induced by narcotics until the second stage is reached when active interference may be undertaken if necessary. If the membranes are ruptured interference may become imperative on account of elevation of temperature or the pulse of the mother or alarming changes in the foetal heart rate. This interference includes Dührssen's multiple incisions of the cervix and vaginal caesarean section both followed by forceps delivery or the use of cervical bags.

Interference in the second stage is not as serious as in first stage and consists principally in delivery by forceps. Frequent vaginal examinations are to be avoided and rectal examinations should be their substitute.

Premature rupture of the amniotic sac is a common cause of inertia in a patient otherwise well and strong whereas constitutional defects overdistention of the uterus by twins hydramnios and frequent pregnancies are also important etiologic factors in producing this condition.

Retention of the placenta with or without hour glass contraction of the uterus is a common result of inertia extending into the third stage and hemorrhage is likely to occur during and after the placental stage.

EDWARD I CORNELL

LABOR AND ITS COMPLICATIONS

Siemons J M The Significance of Fever at the Time of Labor *Int J Obst N* 1918 LVIII 3

The histological picture presented by the placenta in 34 cases has been studied. Typically the bacteria are found in the subamniotic connective tissues where they come in contact with the large foetal blood vessels which cross the surface of the placenta. Occasionally it is possible to demonstrate bacteria in the act of penetrating the walls of the vessels. In most instances the epithelium covering the villi is intact the capillaries within the villi are normal and bacteria are not demonstrable on the surface or in the interior of the villi. Under these circumstances it is evident that the infection does not proceed from the maternal circulation and does not pass through the walls of the villi. Bacteria enter the placenta by way of the amniotic membrane and the amniotic fluid. Generally the latter becomes infected because the membranes rupture prematurely labor is prolonged and repeated vaginal examinations are made.

As placental infection is usually limited to the amniotic surface of the placenta the complication is more likely to be serious for the infant than for the mother. Not infrequently infection of the foetus leads to its death either shortly before or within a few days after it is born. If the author's

experience is not unusual placental bacteræmia as a cause of fetal death is outranked only by syphilis and birth injuries

The frequency of the phenomenon is such as to make it a matter of considerable practical importance. In one series of 600 labors placental bacteræmia was noted in 10 instances. In another series of 1,000 labors it occurred 24 times. On the basis of its frequency is 2 per cent of all labors at term. In other words the incidence of placental bacteræmia and of intrapartum fever is identical.

EARD I CO L

PUERPERIUM AND ITS COMPLICATIONS

Miller H A and Chalfant S A. The Treatment of Puerperal Blood Stream Infection by the Administration of Arsenobenzol. *A Report of Cases.* *J Obst N Y* 9 8 1 9

With the use of intravenous injections of arsenobenzol it has been possible in every instance to rid the blood stream of its invading organisms. All varieties of organisms first encountered seem to be equally influenced.

Cultures from localized abscesses are usually identical with culture from the blood stream. Cultures from the uterus although this same organism is predominant are rarely pure cultures.

Reinfection from focal infection may and does occur but is not easily influenced by the arsenobenzol. The organism is destroyed.

The leucocyte count usually low compared with the temperature and pulse. After arsenobenzol has been given there is a marked decrease in the count. If after this time there is a decided decrease in the leucocyte count without a corresponding improvement in the patient it is probable that the patient has reinfectured herself and a relapse may be given without waiting for confirmation of this by laboratory report.

In the cases the authors have had the blood treated is usually found to be sterile in twenty-four hours. Always in forty-eight hours. Rabbit experiments made by Allison of the Singer Memorial Laboratory

would indicate that a dose of 6 mg is necessary to secure prompt results.

In suspected blood stream infection arsenobenzol may be given immediately after a culture has been taken in order to avoid the delay incident upon waiting for a laboratory report.

Eleven cases are reported.

EARD L CO L

MISCELLANEOUS

Copeland G G. Blindness of the Newborn. A Preventable Disease. *Cand M J* 9 8 7 4

The latest statistics representative of Ontario and therefore probably true also for the other provinces of Canada are presented. 33.5 per cent of the students of the Ontario School for the Blind at Brantford are blind from the effects of congenital disease. 2.6 per cent are blind as a result of gonorrhoea. 23.3 per cent are blind as a result of venereal disease present at or contracted at birth. 2.6 per cent are blind from the effects of ophthalmia neonatorum.

All cases of ophthalmia neonatorum were considered gonorrhoeal. A small number were blind at birth from intestinal keratitis and optic atrophy.

CARD L COR. LL

Belmont B. Prevention of Deformities in the Newborn. *Pea W J M St M J* 9 8 3

Prevention of deformities should begin with the newly born baby. All infants should be examined as early as possible for possible deformities or conditions that may develop into deformities later and the proper measures should be taken at once.

When one considers what a great percentage of the young mankind of the country is not able to perform military service on account of disabilities acquired in early childhood and school life it is evident that the subject of prevention of disabilities deserves more attention. Ed. N. L. C. LL

GENITO URINARY SURGERY

KIDNEY AND URETER

Greenberg G Use and Indication of Endoscopy
M d Times 1918 xl 1 209

Urology is now one of the most precise branches of medicine. For visualization of lesions the most common indication of the urethroscope is for diagnosis and operation in gonorrhoea where the acute stage has abated. Inspection from bulb to meatus in many cases whose adnexa are involved may prevent the lapse into a chronic stage. The color of the mucosa varies being more intense in the bulb than in the spongy urethra. Elasticity, thickness, consistency and stricture the shape of the lumen, glandular involvement seen only in diseased conditions, lacunar infections and invagination or diverticula which may harbor infectious material indefinitely can be seen.

Progress of the disease may be recorded diagrammatically. A veritable panorama from the sphincter to the meatus is obtained in chronic gonorrhoea. With the colliculus seminalis relatively intact in a surprisingly large number of cases a state of diffuse inflammation in the lateral prostatic sulci in the supramontane region almost as far as the sphincter and in the roof of the urethra indicates the presence of follicular prostatitis.

Hæmaturia is commonly due to an ulcer behind a tight stricture; these are primary lesion ulcers in the foremost part in the last stage tuberculous ulcers in the prostatic urethra, chancroidal and malignant ulcers or traumatic ulcers from the breaking of a chordee. There are no ulcers from gonorrhoea other than traumatic.

The author discusses the development and merits of an instrument formerly described by himself.
H W FLAG MEYER

Robins C R Recurrence of Stone in the Kidney
Surg Gynec & Obst 1918 xl 1 270

The recurrence of a condition for which a surgical operation has been performed is an important matter and merits serious consideration. The publication by Cibot and Crabtree in 1915 of a study of end results was somewhat startling. This showed a recurrence of 49 per cent of the cases of kidney stone and 9 per cent of ureteral stone. A review of 450 patients by Braasch and W J Mayo showed a recurrence of about 10 per cent. Robins had four cases of recurrence under treatment at the same time, each showing a different type of recurrence.

In commenting on these cases and reviewing the literature he showed that there appears to be no established or understood cause for the formation of stone that coincides with clinical observations that there is no general treatment directed to the

prevention of formation of stone that seems to be effective that infection plays an important role but is not an invariable cause and is subject to variations that cannot always be explained. That the anatomical cause was shown to be effective in one of his cases which recurred twice in the same location, that while the type of operation must be important in preventing recurrence, one of his cases recurred in the opposite side after a nephrectomy and one in the opposite side after a nephrotomy and drainage but no stone in the drained kidney.

He concludes that recurrence is evidently more frequent than supposed and that patients may have a stone and still be in comparatively good health even where there has been a recurrence. He thinks the removal of stones is indicated for good and sufficient reasons and that further study should be given to the causes of the formation of stone with a view to preventing their recurrence.

He reports four cases in the first of which a stone formed after a long period of infection. The affected kidney was removed and this was followed by a formation of stone and infection of the remaining kidney about a year later, it having been entirely free of stone and infection previous to nephrectomy.

In the second case the stone was found in an infected kidney, the other kidney being free. Removal of the stone and drainage of the kidney was followed by infection and stone formation in the opposite kidney in a month, the drained kidney returning to normal.

The third case showed rapid formation of stone in various parts of the urinary tract on both sides. This patient had a horse shoe kidney.

The fourth case had two recurrences in the same location following two pyelotomies.

Cathelin F Calculi in Immobilized and Well Fed Patients with Genito Urinary Infected Wounds
(Les pierres des immobilisés et de bien nourris chez les blessés infectés de l'appareil urinaire).
Régénéral et de thérap Par 1918 x vii 481

In at least 10 cases of men suffering from fistulae the result of genito urinary wounds in which a long stay in bed was necessary. Cathelin noticed at the end of their hospitalization a particular syndrome consisting of the sudden appearance of signs of unilateral renal retention with nephritic symptoms generally accompanied by some fever and a bad general state. This condition lasted from eight days to three weeks until the expulsion of calculi accompanied by a purulent discharge. There was nothing in the history of these patients to indicate lithiasis.

As a matter of fact the patients are more or less infected by the genito urinary tract but the occur

rence of the calculi not due to the cause Cathelin says that the origin of the calculi must be sought in the long period of immobilization that the men indulged heavily in mineral food without useful exercise and that consequently there is an absence of cellular functioning and a good combustion. Thus there is a retent on of mineral matter which leads to the formation of calculi. W. A. BRANNAN

III o. K. The Blood Pressure in Amyloid Disease of the Kidney. Bill J. J. H. pk. H. p. 98

Since the time of Rokitsky so many have studied the influence of amyloid disease of the kidney upon the blood tension that it might appear that little remained to be done. Nevertheless at the suggestion of Welch the following attempt has been made by Hirose to ascertain whether amyloid ever occurs in the kidney without nephritis. He has types of nephritis are associated with amyloid and (3) what change in the blood pressure and in the condition of the heart and arteries accompany amyloid disease of the kidney.

The material employed in this study comprised 57 cases of amyloid disease collected in the pathological department of the Johns Hopkins University and Bay View Hospital. 59 of these showed definite amyloid changes in the kidneys. Section were stained by the various well known methods and the cases analyzed and tabulated to show the condition of the kidneys, heart and other organs as well as the state of the blood pressure and other clinical conditions.

From the analysis of the cases it was found that tuberculosis occurred in 28 and syphilis in 2. Other chronic infections were also found often in connection with the disease so that the cause of amyloid disease cannot be regarded as simple.

Thirty-two cases were male and 7 female. Febr reports 89 cases in males and 63 in female. With regard to age it was found that most of the cases died in the third decade.

The excess of death with amyloid disease in the third decade is probably due to the fact that tuberculosis is so common in persons of that age. It is striking that of the 59 cases 6 were negroes in spite of the fact that more white than negroes were treated in the hospital.

The study may be thus summarized:

1. In a series of 59 cases the presence of amyloid in the kidneys has always been associated with chronic nephritis. It is impossible to determine whether the nephritis antedated the amyloid or was developed coincidentally with it. In 40 cases in which measurements were given the kidneys were larger than normal. While in nine they were small and granular.

2. In all but one of the 15 cases in which the blood pressure was recorded it was found to be normal or below normal. In the one case in which the systolic pressure was 170 mm. the kidneys were large and there was no cardiac hypertrophy.

Of the 59 cases showed cardiac hypertrophy but only one of the cases was associated with small granular kidneys and none with high arterial tensions noted.

It appears that even if it is assumed that a persistent nephritis produced cardiac hypertrophy and hypertension the advent of the amyloid process must have reduced the blood pressure to a low point and many cases have caused a retrogression in the state of the heart. GEO. E. F. HUBB

Mason J. M. Tl. M. n. g. m. nt. of Subpar. t. l. Injuries of the Kidney. S. g. G. J. Ob. l. 98 7

The author claims that while gunshot a immediate stab wounds of the kidney usually require immediate surgical treatment on account of profuse hemorrhage the concealed or subperitoneal injury to the kidney often remain under medical care until grave symptoms demand surgical consultation. This is often the great detriment of the patient who should be under surgical care from the beginning.

Any trauma which is followed by hematuria should cause the patient to be kept perfectly quiet and under constant observation until the nature of the injury can be determined. If hemorrhage is associated with colic pain tenderness or tumor in the region of the kidney it indicates serious injury to the organ.

Subperitoneal injuries may consist of contusion, slight lacerations of kidney substance or complete rupture of the organ. The kidney alone may be damaged or there may be complicating injuries to another organ or to the structure of the body. In deciding on a plan of treatment due allowance must be made for any complicating injury present.

Treatment consists of expectant or non-operative treatment early exploration or late operation.

Expectant treatment is not advised as the author considers it unsurgical, unsafe and illogical and according to Wats and Neilson and others it is attended by the highest mortality of any of the above plans.

Early exploration he considers to be indicated in every case unless severe shock or complicating injuries demand delay. Late operation is for those cases which are not seen early or where complications have made it inadvisable to operate earlier. Late operation robs the surgeon of the opportunity of such conservative work on the kidney as might have been carried out by early exploration. If delayed cases infection has been usually added to the original injury making nephrectomy necessary where suturing or resection might have been employed earlier.

He summarizes the advantages of early exploration as follows:

The danger of exploration is properly handled case is slight and is not to be compared to that of expectant treatment.

2. The nature and extent of the injury may be definitely and promptly determined.

3 Appropriate measures may be employed with out delay for the control of hemorrhage to guard against infection and to provide for drainage.

4 In certain favorable cases suture of the ruptured kidney may be successfully carried out while in other instances the kidney may be saved by packing and draining.

5 A hopelessly damaged kidney may be promptly removed thereby shortening convalescence and restoring the patient to health in the briefest possible time.

The author reports three cases. The first was contusion or slight laceration of the right kidney due to a fall from a train. This case was complicated by fractured ribs, a fracture of the neck of the left femur and fracture of the right iliac crest. These complications prevented exploration of the injured kidney. Hematuria and other symptoms disappeared at the end of four days and the patient recovered without operation.

The second case was rupture of the right kidney due to a fall from a train. Death from shock and hemorrhage occurred on the afternoon following the injury while preparations were under way for operation.

The third case was rupture of the left kidney the patient had been struck by an automobile. This patient was seen on the sixth day following the injury. She had pain, tenderness and tumor over the left kidney, a temperature of 101.5 and hematuria. The kidney was found deeply lacerated in two directions. Nephrectomy was done and recovery followed.

In each case the source of the hematuria and the presence of a second functioning kidney was demonstrated by the cystoscope.

In all cases gas oxygen anesthesia was employed.

Frithingham C. Studies of Renal Function During and Immediately Following Some of the Acute Infectious Diseases. *Arch Int Med* 1918 LVII 74

The author calls attention to the fact that during almost any of the acute infectious diseases definite anatomic lesions of the kidney may occur. These lesions are usually associated with certain clinical signs such as oedema, scanty urine, albumin in the urine and abnormal findings in the sediment. It has been shown by Schwartz and McGill that the renal function as studied by various special tests is much impaired in these cases.

During the course of acute infections certain cases fail to show any evidence of renal disturbance by the usual routine examination of the urine. The question arises as to whether or not these cases without apparent renal involvement would show any disturbance in renal function by the special tests more recently devised for the purpose either during the febrile period or soon after.

As bearing on this question the author reports his findings in a series of cases studied in the Medical Clinic of the Peter Bent Brigham Hospital. The

tests used were the phenolsulphonephthalein test of Rowntree and Gerigthy, the estimation of blood urea by the method of Van Slyke and Cullen and the determination of McLean's index of urea excretion.

The renal function was determined during and just after an acute infection. Cases were selected among young people who presented no evidence of chronic nephritis and no evidence of acute nephritis as sought for by the usual urinary studies. Usually all the tests were performed on the same day.

The results of this study are grouped by diseases and recorded in tables with an accompanying discussion of the findings. These groups include typhoid fever, pneumonia, type one pneumonia, type four acute articular rheumatism and a miscellaneous group made up of a variety of diseases such as gonorrhoeal arthritis, abscess of the periosteum, acute gout, cervical adenitis and bronchopneumonia.

For a detailed discussion of the findings in these cases one must consult the original paper. As a general conclusion the author states that the renal functional tests employed failed to show consistent evidence of impaired function during the course of or following these acute infections in which the clinical picture or the urinary examination by the older methods showed nothing suggestive of acute nephritis.

H. A. FOWLER

Schrump J. H. A Simple Method of Estimating the Indigo Carmine Output. *ib J Surg* 1918 XXVII 171

Urine is collected for a specified time and diluted to one liter.

An amount of indigo carmine equal to that used in the test is dissolved in ordinary water and diluted to one liter. An undiluted portion of this makes a 100 per cent control, one half strength 50 per cent and so on.

The phenolsulphonephthalein test requires a corresponding dilution.

The same principle of dilution and control can also be used in a colorimetric determination of other substances.

THEO. DROZDOWITZ

BLADDER URETHRA AND PENIS

Hunner G. I. Elusive Ulcer of the Bladder. Further Notes on a Rare Type of Bladder Ulcer with a Report of 25 Cases. *Am J Obst N Y* 1918 LXXI 199

These ulcer areas are always small, usually measuring not more than 5 mm in diameter. They may be linear and measure from 0.5 to 2 cm in length and from 1 to 2 mm in width and may thus resemble the mouse eaten linear ulcer not infrequently found in a tuberculous bladder. Two or three minute ulcers may be found in a group and they may be surrounded by a small red area of oedema. The ulcers always appear to be superficial. The

bimanual palpation before cystoscopy may cause the ulcer to bleed as may the splitting of the surface when the air distends the bladder if the patient is examined in the knee breast posture. Hence one may catheterize macroscopically clear urine at the beginning of the examination and be surprised to find bloody urine in the bladder immediately after voiding on doing cystoscopy.

The ulcer area may or may not be surrounded by a zone of radially converging vessels. One may find a minute ulcer with or without oedema around it and in another portion of the mucosa an oedema area without an appreciable ulcer. These oedema areas are generally seen immediately after the patient has been having an unusually long period of bladder symptoms with much stranguary.

The cause of this type of bladder inflammation remains a mystery. The chief symptom associated with it is pain. Associated with the pain the other symptoms of cystitis occur in varying degree, namely frequency day and night, stranguary burning and smarting.

From his experience the author believes that no form of treatment will suffice in the cases except complete excision of the inflammation. The excision is done through a suprapubic incision. To facilitate the finding and handling of the bladder it is left full of air if cystoscopy has just been done in the knee breast posture or the distended sterile fluid just before operation. If possible the operation is kept extraperitoneal.

After excision of the diseased area the bladder is closed by bringing the edges together with combination interrupted and whipped suture of entity d formaldehyde tanned No. 2 catgut. Leaving a slight opening in the vertex through which the muhrum rent on catheter is carried and sutured to the bladder wall with a No. 2 ten-day catgut. The first sweep with the interrupted portion of each suture takes all coats of the bladder wall and the second sweep or whipped portion of the suture buttresses in the outer more mobile coats of the bladder. The abdominal wall is closed except for a small opening to carry the rubber catheter and two cigarette drains which are introduced down to the bladder wall.

E. S. A. D. L. C. N. L.

Guth, J. An Operation for Reconstruction of the Urethra in Cases of Stricture or Impassability. *B. I. M. J.* 9, 8.

The author reports three cases of this operation which gave excellent results. The operation first performed by Hochenberg of Chicago and consists in closing the defects in the urethra after cutting away all of the scar tissues by a long pedunculated flap of darts, the introduction of a urinary catheter and the stretching of the dartos and skin over the defect in the urethra. The tube was left in for two or three weeks then removed and the author states he passed 17 bougies six months after the operation. Seven months after the operation the patient passed a renal stone.

The author believes the flap operation is easier to perform and a great deal more satisfactory than the grafting operation. There is no doubt in his mind that the urethral epithelium rapidly grows from the strip left in the roof of the urethra and covers the entire surface of the dartos flap.

V. D. LESINSE

Young, H. H. A New Operation for Epispadias. *J. U. I.* 9, 8, 37.

Most operative procedures advocated in the treatment of hypospadias or epispadias have not given the results desired in the majority of cases. Cantwell's method of treating epispadias by building an urethral tube from the gutter like groove on the dorsum of the penis brings together the inner edges formed by the longitudinal incision on either side of the groove and then dissecting the newly formed urethra free has been the most popular.

Young has entirely eloped an operation on some that differs from Cantwell's technique which is graphically shown. The procedure as one then requires a procedure in lifting the spiration of the corpus cavernosa with transplantation of the new urethra. In this method it is evident that the most important thing to preserve is the blood supply of the skin transplant which is left attached by a band connection along its entire length to the left of the corpus cavernosum and then rotating the structure with the urethra so to place the latter to its new position between the corpora.

The transplantation is essentially accomplished. The corpora vere are separated so that they remain together only by the skin on the under surface of the penis. A very deep groove to be occupied by the urethra is thus produced. The lip of the pubis is sufficiently mobilized to allow it to be rotated along with the urethral graft. To close the roof of the urethra a continuous chromic catgut suture is used. The newly formed urethra by this method is shifted to position between the corpora cavernosa by bringing together the corpora above the ungirt ruptured sutures of chromic catgut.

The operation is completed by drawing all of the sutures bringing together the two halves of the glans and approximating the skin edges along the dorsum of the penis. Young has performed this operation twice and in both cases the results were excellent.

H. W. F. W. L. ER

GENITAL ORGANS

Woodruff, S. R. The Postoperative Question of the Penis. *J. U. I.* 9, 8, 63.

The author discusses the question from the viewpoint of the necessity for operation in the diagnosis of the differentiation of the scrotal tumor, the bladder or calculus and the necessity of cystoscopy. Exclusion of carcinoma is mostly by the character of the rectal touch. The characteristic particularly stony, flat, fish-shaped mass generally

smaller than the usually enlarged gland is a more definite means for conclusion than hæmorrhage or residual urine.

A serious menace to successful termination of a case is a large amount of residual urine even if uninfected. It means a dilated atonic bladder, dilated ureters with some hydronephrosis, compression and absorption.

Pre-operative treatment consists of urea, nitrogen, uric acid and creatinin for retention, phenolsulphonphthalein in frequent tests for the variance of renal function from time to time. The author considers over 5 mg. of creatinin per 100 ccm. and less than 25 per cent for two hour phthalein output as very grave.

Hygienic and dietary measures and removal of residual urine and cystitis by daily catheterization, the indwelling catheter or suprapubic cystostomy with irrigations, prepare the patient for enucleation.

The two stage operation is a procedure of necessity. The method of enucleation by suprapubic or perineal route is merely a question of the personal equation.

H. W. PLACEMEYER

Cumston, C. G. A Note on the Treatment of Wounds of the Genital Organs in Warfare
Int. Surg. Phil. 1918 15: 1306

Wounds of the scrotum and testicle by missiles are on the whole relatively frequent. There may be merely a single contusion of the scrotum giving rise to a hæmatoma or traumatic orchitis, with or without lesions of the urethra or hernia of the testicle.

As to the seminal gland it may be simply contused or partially or totally destroyed. The vas deferens may be contused or divided.

The symptoms are not usually very marked. Hernia of the testicle may be primary or secondary.

There is one point which merits particular attention, i.e. death may occur from infections, complications or from associated lesions, i.e. hernia of the testicle arises. Three eventuality are to be looked for: (1) the organ may slough, (2) become reduced spontaneously, and (3) become grafted on a neighboring area.

When the testicle is injured to an extent beyond repair, castration must be done, but it should not be forgotten that repair may take place. There is a rule in these cases which never suffers an exception, namely, that conservative surgery must be foremost.

For contusion of the scrotum the treatment is usually moist humid dressings. A hæmatoma of the scrotum or an hæmatocele would call for incision and drainage.

If a missile or other foreign body is lodged in the scrotal cavity, it should be removed at once, but the treatment becomes a much more delicate question when the testicle is involved. Not uncommonly the gland is either intact or injured, forms a hernia through the aperture in the scrotum. The only rational treatment is its reduction into the bursa and suture of the latter. The reduction may be delayed for a few days until the scrotal wound has been properly cleansed if it appears to be infected, as is

usually the case, but at the same time the vitality of the testicle must be carefully watched.

There is every reason to attempt reduction even when the testicle is contused or offers a superficial wound. The parenchyma forming the hernia should be carefully reduced and the albuginea minutely sutured. One can never surmise just what this conservative treatment may hold in surprise, but the great value of the organ in question cannot but incite one to attempt conservative treatment.

When considering the question of castration for any motive whatsoever, account should be taken of the condition of the fellow organ which may in its turn be compromised in the injury.

Wounds of the vas deferens are sutured in case of division, but as yet the ultimate outcome of the patients is unknown.

As to retention of urine of reflex nature, a few applications of aseptic catheterization will generally control the situation. Suprapubic cystostomy should be done for retention of urine following an injury to the urethra, and a few days later the urethra can be repaired by some of the many methods at disposal.

THEO. DROZDOWITZ

MISCELLANEOUS

Krotoszyner, M. A Plan for a Complete Urological Diagnosis at One Sitting. *Calif. St. J. Med.* 1918 11: 378

The author denies the performance of several tests reportedly done at different cystoscopic sittings and describes the conditions for a routine single cystoscopic examination. He discusses the advantages for determination of undisturbed renal activity, the feasibility of the injections, and the trustworthy deductions as regards renal sufficiency and insufficiency.

In a tabulation for the purpose of group comparison in case groups of equal numbers, a ratio of comparative values of urea, phloridzin and phenolsulphonphthalein, and the discrepancies encountered is made. Six comprehensive table groups are given which determine the coincidence and the ratio of parallelism in percentages, unilaterally and bilaterally.

The author describes the single sitting in sequence. The blood urea having been taken, the intravenous indigocarmine injection is made at the start of the cystoscopy. Bladder examination and observation of appearance time of the dye from the orifices is followed by ureteral catheterization with bilateral collection of the urines. Two ccm. of 0.5 per cent phloridzin solution now injected are collected in two test tubes containing heated Fehling's solution by separate observers. The cystoscope being removed, the patient is transferred to the X-ray room. The sugar collection is here terminated and gravity thorium pyelography performed.

For the qualitative indigocarmine and quantitative phloridzin and urea tests, 5 ccm. of urine specimens suffice. The entire sitting is carried out in about one hour.

H. W. PLACEMEYER

Walther H W E A Flexible Metallic Ureteral
Sound with Filiform Guide J U I 9 8

53

All physicians who do any amount of ureteral catheterization and sounding encounter cases in which it is impossible to introduce ordinary sized ureteral catheter into the ureter for any distance. That it is very important at times to establish whether or no the ureter is patent is obvious.

Walther describes a new flexible metallic ureteral sound with filiform guide which has proven successful when other instruments fail. Adopting the principle Le Fort introduced by his flexible silk filiform with metal sound followers, Walther has constructed a flexible metallic ureteral and the length of an ureteral catheter with a semi-olivary tip of the size 11 Charrière the extremity of the tip being a screw thread projection to join to any ordinary Le Fort filiform. The shaft of the ureteral sound being flexible has all the reliability of any catheter with the added advantage that it possesses inherent more rigid tip.

In ureteral stricture or other obstruction in the ureter this instrument has been of value. The technique employed in passing this sound is simple. With the operating cystoscope in a water distended bladder the filiform guide firmly screwed to the flexible sound is fed into the catheter channel of the cystoscope. After the filiform enters the bladder catheterization is attempted in the usual way. Naturally the finer the tip of the filiform the more readily one is apt to get through the ureteral stricture or other obstruction.

Walther has found the Le Fort filiform much firmer in consistency than the usual ureteral filiforms now in use. By manipulating the filiform with a cork screw motion one will frequently succeed in getting through even the most severe type of stricture. When passage up the ureter could not be accomplished in any other way. Once the filiform passes the narrow point the instrument can then be pushed up until the olivary tip engages the stricture dilating the same to Charrière.

Maldagen J M Urinary Calculi in Infancy
(Lithiasis renal infantum) R mid d
R a 9 8 73

Urinary calculi in young children are not often observed in South America. In Buenos Aires 12 cases in 25,000 examinations observed only 4 cases, 2 of the urethra, 1 of the bladder and 1 of the kidney. In the Children's Hospital in the same city during the past twelve years 18 cases were observed.

In the author's personal statistics of 1 year's practice at Rosario he has seen 6 cases of urinary calculi in children, 3 in the bladder (operated upon), 1 in the anterior urethra, 4 preputial and 1 in the ureter.

The author reviews the etiology. The symptomatology observed in children is like that seen in adults. In treatment surgery may be indicated for vesical calculi. The usual procedures for the adult are suitable for the child, vesicoperineal or suprapubic section, lithotomy, etc. Suprapubic cystotomy with total closure of the bladder is the method of choice for the child and should be done immediately after a diagnosis of calculus is made. The high position of the bladder during early childhood more abdominal than pelvic facilitates the section. It is unnecessary to have recourse to Petersen's rectal balloon and in order to operate with ease it is necessary only to distend the bladder partly with from 60 to 100 grams of sterilized water.

The author gives the full details of two cases of bladder calculus in which he operated by the suprapubic route. In the first a boy of four years a calculus 5 cm by 3 cm in size and weighing 19 gm was extracted. In the second case a boy of ten years the symptoms suggested a calculus in the left ureter. On operation the stone could not be found. It was believed to have migrated to the bladder during the manipulation. This was shown after removal to be the case. The sound was therefore closed. Both cases made good recoveries.

W A B E N Y

Mit D I Tl Abpt n of D g nd Poi
sns from th Bl ddr and tl Ureth
Aborpt on f v ous Alkalo d Ant sept c
Local Ana th ti nd Salts J U I 9 8 1

In a paper communicating Michtreid's observations the absorption of morphine and apomorphine from the bladder and the urethra and no undertaking the study of a large number of pharmacological agents from the same organs.

The drugs investigated were atropine, pilocarpine, nicotine, acotine, ephedrine, phenol, cresol, camphor and alypin.

The results were that a large number of drugs and poisons can be and are absorbed from the urethra. The absorptive power of the bladder is very poor as compared with that of the urethra, which agrees with clinical findings. This holds good not only in the case of the male but also in the female.

LOU GROSS

SURGERY OF THE EYE AND EAR

EYE

Byers W. G. The Diagnosis of Inflammations of the Uveal Tract of Systemic Origin. *Canad. M. J.* 1918, VIII, 593

The author does not speak of the ordinary signs upon which the diagnosis of uveal tract inflammations are made *per se*, nor of any special changes that are supposed to take place in special infections. He confines himself to the aspect of diagnosis which has to do with the determination of the causes of the uveal inflammations of systemic origin. He would have the reader understand the term uveal to cover any and all divisions of the vascular tunics of the eye namely the iris, ciliary body, and choroid.

Theoretically it is stated that the subject in general belongs very properly to the internist, but since the oculist is the recipient of most of the work in this field it has been very properly investigated by him. His reports from various sources testify.

Of the old etiological factors causing uveitis only two remain, syphilis and tuberculosis, and these have their relative importance more clearly defined. While other with a connection still existing have their relationship to ocular disturbance explained in quite a different manner than formerly. As for instance but a short time ago chronic rheumatism was regarded as one of the well known causes of uveitis, while today chronic rheumatism in its protean dress is looked upon as largely if not entirely symptomatic of focal infections that are also the cause of ocular manifestations of disease. Since the pathologists have refused to accept a non-bacterial origin for inflammation it has placed many affections in a different light. Anaemia is no longer regarded as a causative factor but a predisposing influence, as occasioned by infection. Likewise diabetes and gout have been brought into question as to the direct part played by them and so with other conditions.

Citation is made of the work of Irons and Brown based upon a study of 100 cases of iritis in which every modern research was brought to bear upon the elucidation of the etiology.

He divided cases of uveitis into four classes.

Class 1 (45 cases) In which a single factor was isolated as the cause of the uveitis.

Class 2 (37 cases) In which though several possible single etiological factors were determined the investigators were able to say after a careful weighing of all the evidence that one only was responsible for the uveitis.

Class 3 (1, cases) In which several possible etiological factors were demonstrated but it was impossible to throw the onus upon any single one.

Class 5 (1 case) In which it was not possible to ascertain the cause.

By adding the figures of classes 1 and 2 together there may be obtained percentage data regarding the etiology of uveitis that are striking in comparison with those still found in current works on ophthalmology though this work of Irons and Brown was not intended primarily to bring out these points. In this connection it is shown that syphilis accorded by some authors a place as high as 90 per cent is given a percentage of but 23 in this series of cases. Focal infection rightly including according to the author gonorrhoea accounts for 51 per cent of the cases. Another illuminating fact is that of the total of 51 cases of focal infection the teeth tonsils and sinuses alone were responsible for 37. Tuberculosis with 8 cases shows its etiological importance.

The author speaks of the necessity of routine examinations in the cases of uveitis and the desirability of team work to be obtained where all the various necessary tests may be made for a proper diagnosis. He warns against that sort of association in which a practitioner jealously maintains control and presents one with preconceived ideas rather than carefully established facts. It is urged that the profession should not evade definite routine examinations even though it entails considerable outlay of time and money both for the physician and the patient. Where the matter is fully explained the author finds no difficulty in securing the co-operation of the patient. The fact that in a series of 100 cases examined by Irons and Brown only 1 per cent could not be definitely tabulated as to etiology speaks well for the necessary pains to be taken and the good results for the patient.

Some standardization is needed in making these examinations and it is suggested that the following in the order mentioned should be the minimum required.

1. A thorough bodily examination by the internist or practitioner including inspection of the free urinalysis and blood examination. Attempt to get a clear history as an aid in establishing the relationship between the ocular disease and some one of the known etiological possibilities. Bacteriological examinations of the secretions from suspected foci of the aqueous humor not alone for diagnostic purposes but also for the possibility of securing valuable autogenous vaccines.

2. A Wassermann test. Because of the very important rôle played by syphilis in disease of the uveal tract this examination is necessary. Never let the social position of the patient interfere with this test. On the other hand a negative Wassermann may be contradicted by a striking improvement under anti-syphilitic treatment. To get a satis-

factory Wassermann reaction the following precautions necessary first blood must be taken directly from the vessel avoiding the skin (subcutaneous fat) and not by bliste or cupping second blood should never be taken (a) after a meal (b) during fever (c) during any acute infectious disease (d) during suppurations or absorptions of large inflammatory exudates pneumonia empyema etc or even in ulcer tngonec tumor (e) after nitric Finally a negative Wassermann does not necessarily exclude syphilis

3 Enormations of the nose and accessory sinuses the throat and the teeth by specialists to supplement that by the general practitioner

The author thinks it strange that the approach to the possibilities of infection from the fields was not earlier in view of the possibilities and opportunities for bacterial development in the crypts of tonsils and adenoids in the crevice and pocket about decaying teeth and especially the deep seated alveolar abscesses that lie dormant to the various cavities adjacent to the nose and connected therewith often so imperfectly drained and prone to closure and all the intimate connection of these parts with their blood vessels and particularly of the lymphatics of the head and of the chest. The richness and virulency of the bacterial flora of these parts has been known for many centuries

Of the three fields under discussion the knowledge that the nose and accessory sinuses present the greatest difficulty in making a satisfactory examination and diagnosis. The X-ray plate should be used as a means of revealing the disease of the nasal accessory sinuses it will also show the condition of the teeth and the presence or absence of alveolar abscesses. Exploration of the sinuses may be necessary. The sphenoid sinus is frequently being the cause of uveal inflammation

The author concludes. It should be of importance in these investigations to seek out all the causes that tend to lower the natural combat forces of the body. The great majority of people carry foci of infection yet only a small percentage develop metastases. It is in my opinion the only resistance that bacterial pathogens tend to follow these lines our problem leads us to the broad fields of preventive medicine the most of which to help man by placing him in a better moral and physical environment J S C

Paggenbiller A H Opticociliary Neurotomy Resection of the Optic Nerve a Substitut for Enucleation J Ophth 98 1 49

This resection of the optic nerve which has been over 10 times at the author's hospital between 1898 and 1913 is indicated in two groups of cases first case of absolute glaucoma with great pain and second cases of total staphyloma where the formation has not advanced to the point of causing great deformity

Intra-ocular tension is reduced and pain is relieved

In cases of injury where enucleation was not permitted the resection of a large piece of the optic nerve was done believing that thereby a definite prevention of sympathetic inflammation as observed and especially if the injury was a penetrating one the eyeball was enucleated and formed an excellent cushion for an artificial eye

The author wishes to correct the impression that the operation is a difficult one. The method of operating is thoroughly described except that it is not considered necessary to resect the muscle and if no profuse bleeding occurs the after treatment is not longer than for simple enucleation S S Ho

Stevens G T Right-handedness in Relation to Visual Conditions V M J 98 69

The manner in which right-handedness influences vision is explained by the fact that the anterior part of the left hemisphere which controls the right arm is the dominant hemisphere. The right arm produces a corresponding enlargement of the corpus callosum on the left side and by a modification of the position of the orbit naturally results in the unequal development of the two sides of the brain

The proper refraction of the eyeball is pushed out and the axis of the cavity is directed from a vertical to a horizontal position. The globe of the eye is thereby tilted in the vertical meridian lying outwards towards the temple with the same result. This is effected by the use of the diaphragm of the eye to prevent the reception of simultaneous impressions on the corresponding points of the two eyes in any position. The prerequisite of binocular vision is the degree of visual confusion from harmonious adjustment of the two retinas. Could the pupils be brought up to the degree of deviation in the meridian from the normal and all upon the physical ability of the subject if the anomaly to make the necessary adjustment. Any condition of imperfect adjustment of the eyes may result in the disadvantage or to the dulling of vision

In conclusion the author advocates the custom of right-handedness of all of left-handedness. The aim of the instruction of the child should be the greatest efficiency in both hands while preventing the classification of either

Orth M R

EAR

Cahoon J F A History of the Ear and its Malfunctions B M J 98 1 36

The author's test is based on the fact that tuning forks vibrate with the same pitch and loudness one inch from the ear as heard in each ear but that if the fork at the left ear is removed to a point three inches from the ear this sound is lost and

only the fork remaining one inch from the right ear is heard. If now the one at the right ear is removed six inches from the ear it will no longer be heard but the left one formerly not heard will again become audible. Similar results were obtained if the fork was placed against a rubber tubing.

For this test the author uses a seven foot length of rubber tubing the hole $\frac{3}{16}$ of an inch the diameter of the wall of tubing $\frac{6}{16}$ of an inch to either end of which is attached an aluminum funnel. The funnels are held to the ears and about one inch away from them by a simple attachment on the headrest of the examining chair which allows of their adjustment to cover the ears without touching the patient.

The 256 C 1 fork is heard by the normal ear when placed against the tubing at any point up to seven and one half feet. With a larger sized tubing the fork is heard as far away as thirty feet.

The application and results in an individual with two normal ears are as follows. The seven foot tube is connected with one funnel the latter being placed about one inch from the right ear. The tuning fork vibrating is applied to the tube about six inches from the ear and moved along the tube away from the ear until it is no longer heard. This will usually be about seven to seven and one half feet. The tube is now disconnected from the right funnel and attached to the left and the same procedure followed. If normal the left ear will also hear the sound of the fork transmitted along the tube up to seven feet or more from the ear.

The tube is now attached to both funnels. The vibrating fork is applied to the tube one foot from the right ear and moved along the tube away from the right ear and toward the left ear. It will be heard only in the right ear until it reaches a point about three to three and one half feet from the right ear at which point it will be heard also in the left ear and will continue to be heard in both ears for a distance of about four inches in the middle of the seven foot tube.

It is this space of about four to six inches in the middle of the tube that the author calls the neutral space. The sound in this neutral space almost imperceptibly disappears from one ear to appear in the other and in this space there is some doubt in the patient's mind as to which ear hears the fork. As the neutral space is passed through the sound becomes perceptible in the left ear and is not heard in the right. It is to be noted that where as the right ear heard the tuning fork up to seven feet in the first part of the test it is now loses the sound of it along the same tubing at about three and one half feet because in this second instance the other end of the tubing goes to the left ear and as the tuning fork passes from the right half of the tubing through the neutral space to the left half of the tubing the sound is heard in the left ear alone. The detection of feigning now becomes practicable if it takes the form of misstatements concerning the hearing in one ear.

The detection of malingering is illustrated by the following case in which total deafness in the right ear was crimed.

With the long one ear tube connected for his left ear it was found on several tests that he heard the fork up to seven and one half feet from the ear. With the same tubing connected with the funnel for the right ear he persistently held that he did not hear it even at four inches from the ear. The tube was then connected with both funnels and the tuning fork started at the good left ear. He admitted hearing the sound in the left ear until a point forty inches from the left ear was reached when he said that he could not hear it. From this point onward up to four inches from his bad right ear he claimed not to hear the sound.

The tuning fork was then placed over the coupling in the tube this point being fourteen inches from his right ear and seventy inches from his left. He said he did not hear it. The coupling was taken apart and the fork again touched to the tube at the same place where he had just said he heard nothing at 70 inches from the left ear on the end that went to the left ear and he said he heard it in his left ear.

He was caught for if his right ear had been deaf he would have heard the sound in his left ear at this point and at every other point up to 84 inches from his left ear while the tubing was still connected with both funnels. He reported not hearing the sound to the right of the neutral space because he was determined to give a negative answer whenever he heard the sound in his right ear.

OTTO M. ROTT

Lathrop C. H. Acute Mastoiditis as a Complication of Infectious Diseases. Based on a Study of 123 Cases in the Base Hospital Camp Shelby Miss. J. A. M. 1918 10 8 1 v 451

In this study the author presents facts and analogies from which he draws the following conclusions:

1 The army camp in question experienced during the past winter an epidemic of acute mastoiditis.

2 This exhibition of mastoid infection is only one expression of the general streptococcus incidence in the camp.

3 The latter streptococcus invasion in turn is but one phase of the very widespread wave of streptococcus disease throughout southern army camps.

4 It is peculiar in two points: (1) The dominant organism is the streptococcus viridans and not a hemolyzing streptococcus as appeared elsewhere and (2) its chief expression is in the form of an unusually severe involvement of middle ear and mastoid tissues.

5 Measles played a prominent part in giving the streptococcus a start and stands as an etiologic factor in the development of the severer types of mastoiditis.

OTTO M. ROTT

SURGERY OF THE NOSE, THROAT AND MOUTH

NOSE

Stephenson S. Cases of Acute Anterior Ethmoiditis in Young Subjects. *Brit J Ophth* 9 8
4 6

The author reports ten cases of bilateral inflammation or suppuration due to an acute inflammation of the anterior ethmoid cells and he believes that many such cases are overlooked inasmuch as the symptoms are so mild.

His conclusions are:

In young subjects usually under five years of age a form of orbital inflammation or suppuration is not infrequent.

The condition always unilateral.

There are clinical grounds for believing that an acute inflammation of the anterior ethmoidal cell is the primary condition.

The prognosis is good since the condition undergoes resolution often without surgical intervention. O. M. R.

THROAT

Ajello A. Primary Sarcoma of the Right Fauces. Tonsil Operated upon by the Lateral Cervical Route. Recovery. (Sarcoma primordiale tonsillinae dextrae operata per methodum lateralem cervicalem). *Riforma medica* 1908.

The author's case was in a man aged sixty-seven years who came to him for treatment seven years ago. Examination showed that the pharyngeal swelling of which the patient complained was a tumor having its origin in the right faucal tonsil. From the clinical and histological findings a diagnosis could be made of primary small cell sarcoma of the right faucal tonsil with probable metastases to the cervical lymphatic gland. An immediate operation was done.

A modified Koenlein incision as made starting from the apex of the mastoid process descending and crossing the sternocleidomastoid muscle then upward and ending at the lower margin of the jaw about 3 cm from the symphysis of the chin.

The aponeurosis along the sternocleidomastoid muscle was incised and the external carotid isolated as well as other important vessels. With an assistant placing a finger in the patient's mouth and pushing the tumor toward the opening the operator was able to locate it, limit, pull it into the opening and enucleate it after some preliminary difficulties to secure perfect hemostasis before opening the pharynx. The swollen gland was resected.

The postoperative course was regular. The patient has been under the author's constant supervision for the past seven years. He continues to enjoy good health and there are no signs of recurrence.

The anatomic diagnosis made from the extirpated tumor in every way confirms the clinical diagnosis. The irritated glands also showed rich leucocytic infiltration with adhesive peradenitis.

Primary sarcoma of the tonsils is very rare. Only about 4 cases have been recorded in literature. W. A. BRENNAN.

Loeb H. W. The Susceptibility to Infection Manifested by the Removal of Incompletely Removed Tonsils. *Oral, Rhin. & Laryngol* 9 8 3.

The author reports five cases in which small stump tonsils became infected and caused similar local and general manifestations to infections of the entire tonsil. The cases present a decisive argument against any form of operation which does not contemplate the entire removal of the tonsil especially where there have already been some infective process originating in the tonsil. The cases suggest to the author's opinion the advisability of following up cases of tonsillectomy to determine whether any portion remains and whether it has become a focus of infection. O. M. R.

Arrowsmith H. The Treatment of New Growth of the Larynx by Internal Surgical Methods. *Brit J Med* 9 8 308.

The author traces the development of internal surgery of the larynx from the earliest days to the present and concludes that although internal surgery according to one plan or the other is entirely adequate to deal with all but the most exceptional instances of benign laryngeal tumors it is entirely inadequate if not dangerous to attempt the removal of a malignant neoplasm by this method.

O. M. R.

Lubman M. P. The Treatment in Tuberculous Laryngitis. *Brit J Med* 9 8 87.

The author pictures the sufferer from tuberculous laryngitis the painful fatal complication of pulmonary tuberculosis and draws attention to the helplessness of the physician in the treatment of this complication.

In discussing the method of prevention of the etiology is mentioned tuberculous laryngitis is secondary to pulmonary tuberculosis the mode of

invasion is through the sputum the tubercle bacillus being the direct etiological factor the bacilli gain access only through a membrane that has had its resistance lowered the chief factors that lower the resistance are to be found in the nose epipharynx and pharynx

With these data the first step toward prevention lies in discovering and correcting any condition interfering with normal respiration or any condition acting as an irritant

Of these specific conditions are mentioned the following (1) deflected septum or a spur (2) sinus disease (3) hypertrophied turbinates (4) diseased tonsils and adenoids (5) pharyngitis (6) lingual tonsil (7) elongated uvula

Some of these conditions act by producing cough which in turn irritates and congests the larynx

Otto M. Rott

Hastings H. Removal of Foreign Bodies from the Larynx Disproving Previously Made Diagnosis *Ann. Otol. Rhinol. & Laryngol.* 1918 xxvii 176

The author reports two cases in which foreign bodies were removed from the larynx although the conditions were mistaken for respiratory diseases such as croup and thymic asthma. He draws attention to the importance of keeping in mind the possibility of a foreign body in the larynx in all such cases and the aid of direct laryngoscopy in clearing up the diagnosis as well as in removing the foreign body.

Otto M. Rott

Schiller A. N. Retropharyngeal Abscess in Infants *Med. Rec.* 1918 xciv 457

There exists in infants a chain of lymph glands that are located on the lateral wall of the pharynx. The function of these glands is to drain the base of the skull and the nasal pharynx. At the age of five months these glands begin to atrophy and disappear at about three years. The cervical and submaxillary glands then assume the function of draining the areas mentioned above. The retropharyngeal abscess of infants is an inflammation of these nodes which goes on to suppuration.

Holt states that 75 per cent of the cases occur in the first year. Bokai reported 6 cases 4 occurring in the first year. Snow reported 114 cases 86 per cent in the first year.

Occasionally there are no symptoms spontaneous rupture asphyxia and death occurring without warning. The first symptom noticed by the parents is usually difficulty in swallowing or breathing. The first sign and the one that every case presents is a submaxillary adenitis the adenitis is unilateral and on the side of the abscess. On examining the neck there is evident puffiness but no redness of the skin. Palpation shows the swelling to be soft the glands small and distinct and never matted together. The amount of swelling is out of proportion to the size of the glands and is due to the infiltration of serum in the periglandular tissues.

In making a diagnosis one should always look for the adenitis and examine carefully the pharynx by means of the finger.

If the disease is unrecognized death from asphyxia may follow. With prompt diagnosis and surgical interference the mortality is low. Treatment is surgical and consists in evacuating the abscess.

J. A. WINTER

MOUTH

Federspiel M. N. Surgical Correction of a Double Harelip Alveolar Cleft and Cleft of Hard and Soft Palate *Dental Cosmos* 1918 lx 581

Federspiel reports a case of a child of four years with a double harelip double alveolar cleft and a cleft of the hard and soft palate. Examination before operation showed a very marked protruding premaxillary bone holding two central incisors. The clefts of the alveolar process united with a medium sized cleft of the hard and soft palate. Further examination at the time of operation showed that the protruding mass contained two central incisors which were tipped lingually. The lateral halves of the upper jaw were very well developed and held two well developed deciduous teeth the occlusion of these being in normal mesiodistal relation.

The shifting of the protruding mass distally would not permit the closing of the alveolar cleft for the mass in itself was too narrow to complete the normal upper arch. Therefore the protruding mass was removed and the vomer bone was prepared to act as a good base for the artificial restoration of two central incisors. The technique employed was as follows:

The mucoperiosteal flap on the labial and lingual surfaces was dissected and the mass containing the two deciduous centrals and the tooth buds of the permanent centrals was removed. The flaps of soft tissue were then brought in contact and stitched on the lateral halves of the jawbone so as to close the anterior portion of the floor of the nose.

Following this operation the double cleft of the lip was closed by bringing in contact the soft tissues which covered the protruding mass and the borders of the lip on each side. The vermilion surfaces were carefully joined and the alae of the nose were turned inward so as to give the boy the proper shaped nostrils. Paraffin silk was used to suture the soft tissues. The wound was kept clean by gently washing it with boric acid solution. The stitches were removed on the eighth day following and the patient was then able to functionate his lip normally.

The cleft of hard and soft palates is to be closed in about six months. In order to keep the space open between the lateral incisors an orthodontic retaining wire will be fitted and adjusted so as to insure this space which at a later date can be restored with a well fitted anchor denture holding two central incisors.

G. W. HOCHSTETTER

Col P P Ununited Fractures of the Mandible
Th Incidence Curation and Treatment
B J S 918 57

From Cole's experience in general military as well as in jaw surgery he has concluded that non union occurs more frequently in the lower jaw than in any bone of the extremities. The reason for this higher incidence is determined by several factors a corresponding degree of destruction in the case of the extremities would frequently lead to amputation approximation with such loss of tissue as would give a good result in the case of a limb would result in the jaw in such deformity and hopeless loss of function as to render this procedure impracticable the superficial reasons for the fractured surfaces are particularly in some situation small as compared with that of the humerus femur or tibia.

There are numerous methods of treatment advocated in the case of fractures of the mandible. Two schools exist whose views on the subject are widely divergent. One maintains that bony union is of paramount importance that correct alignment is incompatible with union in cases associated with loss of substance and that therefore deformity of varying degree must not only be tolerated but deliberately produced in order that bony union may be obtained. The other school also believes in the importance of bony union but it holds that correct alignment should be determined in every case.

The fundamental principle that shapes the procedure of what may be termed the ideal school is the restoration of the normal arch and maintenance of accurate occlusion.

Non union is due to four factors (1) primary loss of substance (2) secondary loss of substance due to necrosis (3) interposition of muscle fascia or other connective tissue (4) presence of a central sequestrum. This is a rare cause of non union.

In repair of fractures it is to be assumed that in the ordinary healthy individual bone possesses sufficient regenerative power to make good any defect caused by injury provided that the conditions are such as to give the best possible effect to the factors which favor the process of regeneration. These factors are first the prevention of interposition second restoration or preservation of that stress which is the normal stimulus to the growth of bone.

The attainment of union is undoubtedly important in so far as it fulfills a functional demand.

There is however no academic virtue in union apart from this and therefore the ultimate and only test should be a functional one in the case of the mandible the patient's ability to masticate ordinary foods. This functional estimate is of importance from the point of view of treatment. It will be the deciding factor in determining the advisability of endeavoring by open operation to

make good the functional defect. The extent of the functional defect and the improvement likely to follow operate on should be duly considered.

In the treatment of non union the author has employed various methods such as plating wiring and bone grafting. In two cases plating was used in the simple plating with a two holed silver plate. Only partial success is claimed for this case. In the second case a four holed silver plate as used the gap being strewn with bone fragments detached from the angle of the jaw. The plate was later removed in the hope that further consolidation might occur. This case was a complete failure. Functionally his occlusion is perfect but the grinding movement is considerably impaired.

In one case he used wiring without a plate and the functional result was perfect. Ten cases were operated upon by the use of free bone grafts. The technique employed was as follows. Two or three days previous to operation upper and lower cast metal caps splints are cemented in place. These splints are provided with bilateral overlapping threaded flange which when fixed together by screws determine the position of the fragments in correct alignment. When the patient is on the operating table these screws are removed allowing the mouth to be freely opened for the passage of the intratracheal catheter. As soon as the catheter is passed the screws are replaced.

A curved skin incision extending well into the neck is now made and a flap turned up to expose the site of fracture. Bleeding vessels are ligated and towel clipped to the skin margins. The ends of the fragments are then exposed freshened and shaped for the reception of the graft. The graft is taken from the tibia and cut to the shape desired. Plates are screwed to the graft before the detaching or scissors cuts are made. The graft with the detached plates is then transferred to its destined site and fixed in the gap by two screws attaching each plate to the corresponding fragment of the fractured mandible and the wound sewed up.

In two cases thus operated upon suppuration occurred with effusion of the whole graft. Three cases were entirely successful. In the remaining five cases progress has been such that at the very minimum a percentage success of 60 is assured.

He has also used pedicled grafts in eight cases. The results obtained by this method are rapid and certain. To such an extent is this so that in cases with non union amenable to treatment by means of a pedicled graft success can be practically guaranteed.

The results obtained in the treatment of ununited fractures of the mandible are such as to justify the conclusion that no patient so afflicted should be discharged until operation has not only been deferred to but urged upon him. The functional disability associated with ununited fracture of the mandible is an unnecessary disability in most cases. It is a blot upon the escutcheon of surgery which should be removed.

G W HOCHBERG

Morestin II Closure of the Palatal Breach After Resection of the Superior Maxillary (Locclusion de la brèche palatine après la résection du maxillaire supérieure) *Bull et mém Soc de chir de Par* 1918 xlv 1002

The breach left after an extensive resection of the upper maxilla especially for malignant tumors tends toward spontaneous closure nevertheless there is persistence of communication between the mouth and the nasal fossa which no prosthetic appliance can satisfactorily remedy. Mere external deformities can be remedied by cartilage grafts as previously reported by Morestin but the case is quite different when there is an extensive palatal breach. In this latter case Morestin thinks that the mucous membrane of the chin just below the lip offers remarkable resources to the surgeon in reparative surgery in the palatal region.

When the plastic operation can be carried out immediately the results are very much better than when it is done long after the maxillary resection. The breach often measures 3 to 5 cm deep and 2 to 4 cm wide and in a loss of substance of this extent there is no other way than to use the mucous membrane of the cheek. But in the minor losses the author uses strips cut from the upper portion of the chin. The procedure is divided into four stages (1) freshening up the edges of the breach (2) dissection and mobilization of the chin mucous membrane (3) stripping the palatal fibromucous tissue (4) suture.

The freshening is done so that half the thickness of the fibromucous edge is cut away leaving a collarette all around with its freshened face toward the mouth. The pediculated flaps from the chin are passed inward through incisions made in the cheek in the vicinity of the edge of the breach. All fibrous tissue about the edge of the breach must be fully removed before the mucous membrane from the chin is fitted and sutured in position to the palatal mucous.

A small curved Reverdin needle and silkworm gut are used in suturing. The operation is done under local anesthesia. Although abundant hemorrhage is usual in cutting the chin tissues it does not persist and easily yields to tampons. The closure of the entire breach may be satisfactory after the first attempt or it may require a number of similar operations before it is finally accomplished.

Morestin describes in full detail four cases in which he satisfactorily carried out this autoplasmic operation. In these cases the maxillary resection was prior to the plastic operation. But in very many cases Morestin thinks that there is no use in waiting but that the breach should be closed at the time of its creation. In these cases the mucous membrane of the cheek can generally be used. The closure of the breach does not prevent the application of prosthetic apparatus. W A BRANNIN

Freer O T A Carcinoma of the Epiglottis and Root of the Tongue Removed by the Simpson Radium Needles with Description of a Needle Placing Instrument *Tr Am Laryngol Ass* Atlantic City 1918 May

The Simpson needles are short hollow needles one and one sixteenth of an inch long and one sixteenth of an inch thick made of steel and platinum plated with gold the cavity of the needle being packed with 12 millimeters of radium sulphate which is sealed within the needle after the detachable eyeportion of the needle has been screwed down upon its hollow shank. The wall of the hollow needle is three tenths of a millimeter thick thick enough to filter out the irritating α and softer β rays while permitting the hard γ and γ rays to pass freely through the wall of the needle.

The needles are stout enough to endure the firm grasp of a needle holder for their introduction into the tissue but Freer has devised a needle placer for inserting the needles a device which in the case of carcinoma of the laryngopharynx just treated has permitted their exact introduction into the flesh with an accuracy and ease that he thinks will make it possible to needle even intrinsic carcinoma of the larynx by the indirect mirror method of laryngoscopy a method so much less distressing to the patient than direct or suspension laryngoscopy.

With several Simpson needles the effective so called cross firing of radium rays may be produced and a single completely effective large dose of radium rays is obtained by leaving the Simpson needles in place for from nine to twelve hours. Their efficient screening prevents the undesirable integumentary burns that were so common before it became known that the soft β rays and the α rays must be filtered out. OTTO M ROTT

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SURGERY OF THE CHEST

Chest Wall and Breast

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Trachea and Lungs

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Heart and Vascular System

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Pharynx and Oesophagus

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SURGERY OF THE ABDOMEN

Abdominal Wall and Peritoneum

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Gastrointestinal Tract

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 T t M J 98 5
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 A s f e f t e m y l t R A W l 98 [54]
 I c t t e l d 98 63
 P l e p h t f t h l l m b C W A T H B l l
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Fractures and Dislocations

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 T h t m t f g h t d f t h h m r u
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 T m t f m p o d f t f t l f m H T
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 A m pl method f r bl l l t e J G W z d
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INTERNATIONAL ABSTRACT OF SURGERY

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COLLECTIVE REVIEW

LESIONS OF PERIPHERAL NERVES

By MAJOR J. FRANK CORBETT M. C. U. S. A.

THE literature concerning the principles of nerve surgery is so enormous that a complete detailed review of all is impossible. Only such references have been given in full as seem to shed light on fundamental principles. This method has been adopted rather than the making of a complete list of all articles reviewed.

Every wound of injury of a peripheral nerve should be recognized at the earliest possible time so that immediate treatment may be instituted. Lyle (36) has stated: "It is imperative whether a nerve is divided or not that paralyzed muscles be relaxed and protected from strain by a suitable apparatus. Under no circumstances must this be deferred as an after treatment. The postural prophylaxis begins with receipt of the wound and continues after operation until voluntary movement is restored. On the other hand Tinel (55) warns that splints continually applied holding in a fixed position both paralyzed muscles and those not paralyzed result in extensive joint and tendon lesions. Not only should no over stretching of paralyzed muscles be permitted but permanent fixation of tendons and joints prevented by early massage.

This should be given daily and to every paralyzed muscle. In addition Tinel emphasizes the necessity of mobilization and states that all appliances should be easily removable. Jones (28) cautions against allowing a paralyzed muscle to become over stretched even momentarily when removing the appliance for massage or mobilization.

To attempt to describe all the splints recommended for this purpose would be almost im-

possible. Mention may be made of the following: the apparatus of Marie and Meige for musculo-spiral Lemoing's glove, Dagman Bouveret splint, Jones' cock up splint for wrist drop and Jones' splint for median nerve paralysis and for foot drop.

Von Lorentz (58) urges early postural treatment and gives as an additional argument the statement that over stretching in case of nerve section causes the ends of the nerves to separate to so great a degree that they cannot be gotten together at operation. Jones, Tubby and Sherren have emphasized the necessity for postural treatment.

There exists considerable difference of opinion between various nerve surgeons as to the proper time for operation. The dangers from latent infection and the possibility of spontaneous recovery argue for prolonged treatment before resorting to surgery. On the other hand the chance of immediate and certain improvement with early neurolysis decreases with time. There is great variation in choice of time. Wilms (61) explores all cases because it is his opinion that it is easier to approximate and suture nerves when operated upon from the tenth to the fourteenth day.

Borchardt (8) states that the indications for operation are based on neurological examination. Operation should be done in all severe injuries of nerves. The following symptoms are considered to be evidence of severe lesions: total failure of function of nerve motion and sensation, lost reaction of degenerative and trophic and vaso-motor disturbance. Operation as early as the

fourteenth day has been done but usually six or eight weeks are necessary to allow neurological findings to be established and to allow wounds to heal. The longer operation is deferred in case of compression the less favorable is the prognosis.

Nonne (41) with a reaction of degeneration and anesthesia advises a delay of from six to eight weeks to see if function improves. Nonne states it is impossible in a great majority of cases to determine by neurological examination whether the nerve is severed. Reactions of degeneration and disturbances of sensation and motility may be as great in cases of severe contusion or concussion. Tinel (55) urges no intervention until every item of clinical information is obtained to prove the existence of complete interruption or simple compression of a total lesion or a partial change of regeneration that is non-existent or is simply difficult to effect. This often means a delay of two or three months. On the other hand an operation must be carried out as soon as possible once its necessity has been determined upon.

Tinel found sixty per cent of nerve lesions to recover spontaneously with proper postural, mechanical and electrical treatment. Indications for operation are as follows: (a) absence of regeneration (b) defective difficult or partial regeneration (c) complete interruption. Hoffman (21) insists on waiting for complete healing of the wound. He emphasizes the persistence of bacteria in the tissues after healing, especially in fracture cases and therefore urges a delay of from six to nine months. The danger from recrudescence of infection is very great in war wounds. Bond (6) has recorded instances of infection being lighted up by mechanical breaking of joint adhesions. Moynihan (40) waits three months after healing in bone cases and one month in other cases. He urges correction of joint ankylosis before operating on nerves. Do not operate until healing is complete else infection will flare up. The plea made by Sherren for early operation applied to wounds of civil life more especially than to the extensive war wounds with a history of past infection. In like manner the wound of the South African and Russo-Japanese war do not compare to those of the Great War. Therefore the indications for operation differ.

The pathology of nerve wound presents an extensive field. Sherren mentions physiological interruption and anatomical interruption. Tubby (56) has applied the term *concussion* of the nerve to a form of physiological interruption. It is damage done to a nerve trunk without

actual destruction of axis cylinders and the damage may consist of an effusion of blood between the fibers following compression of a nerve against bone by the rapid passage of a foreign body in the immediate neighborhood of the nerve. In other cases actual lesion may not amount to hemorrhage but to a temporary anemia or its opposite hyperemia.

Heile and Hezel (20) state if the nerve be grazed by a bullet that an inflammatory exudate may occur in the nerve causing the contour of the nerve to be altered. The diameter of the swollen nerve may be three times that of the normal nerve. In time this exudate is absorbed leaving behind more or less intraneural scar tissue and adhesions to nerve sheath. The amount of connective tissue determines whether the interruption is physiological or anatomical. Monstemon (39) reports rapid recovery of paralyzed limbs following the liberation of nerve slightly bound by extraneural scar tissue. Tinel explains this on the ground of physiological interruption of conductivity without occurrence of Wallerian degeneration. Anatomical interruption as described by various authors may range anywhere from severance of a nerve with separation of its end to complete fusion of nerve end in gigantic masses of scar tissue.

Tinel classifies lesions as follows: (a) total or partial section (b) tearing, crushing or perforating resulting in whole or part of the nerve being involved with central, lateral or total neuroma (c) strangulation by fibrous bands (d) contusion or attrition shown by hemorrhagic or fibrous infiltration.

Every cut nerve when allowed to heal, whether completely severed or not, presents an enlarged bulb at the site of injury springing from the proximal segment. This is known as a neuroma. The neuroma consists of the local proliferation and entanglement of regenerated nerve fibers. The neuroma represents an attempt of the axis cylinders to penetrate the connective tissue simultaneously formed. Some of the fibers are stranded, others are deflected and may form Perroncito spirals. Tinel considers tumors formed by thickening of the envelopes by hemorrhagic or fibrous infiltration of the nerve or by neurological elements to be pseudo-neuromata.

When a nerve is anatomically interrupted certain changes take place in the nerve proceeding from the lesion peripherally so far as the nerve distributes. These changes first described by Waller (60) in 1850 and amplified by Ranvier (47) in 1873 by Beneke in 1872 by Huber and Howell (23) in 1892 and finally by Ranvier (46)

in 1912 are commonly referred to as wallerian degeneration. This consists of at least three distinct processes: first change and fragmentation of axis cylinders; second myelin change and absorption; third changes in the syncytial cells of Schwann. The last process is emphasized in studies on regeneration. Soon after section of a nerve the cells beneath the neurilemma begin to hypertrophy, sending out processes of protoplasm. Numerous nuclei resulting from mitosis soon appear in these bands. These protoplasmic many nucleated masses are known as protoplasmic bands. Attention was called to them by Bunker in 1891. Howell and Huber described embryonic bands or embryonic nerve fibers in 1892. Lewis considers these protoplasmic bands to be essential to nerve regeneration in that they form a conducting pathway. Ingebrigtsen (25) has shown the possibility of axis cylinder growth in plasma, and Clark has found regeneration of nerves in rabbits without change in the neurilemma. Axis cylinders according to Huber have some power of penetrating scar tissue. Spontaneous repair of severed nerves has been recorded where a considerable gap had to be bridged. Notta's (42) case is an example. Notwithstanding the above exceptions, the new conduits formed by protoplasmic bands offer the best channel for regeneration. Korybutt, Daszkiewicz considered the proliferated sheaths of Schwann as anlage for new axis cylinders.

On section of a nerve the cut axis cylinders of the proximal stump both medulated and non-medulated split up into numerous branches. Ransom says there may be an immense overproduction reaching to as great as from twenty to sixty times the original. This is exclusive of the so-called abortive regeneration changes in fibers. In the proximal direction the medulated fibers do not degenerate for more than a fraction of a millimeter but the non-medulated may degenerate for a distance of 1 cm.

Regeneration is now generally considered to occur by a downgrowth of the axis cylinders from the proximal portion. Such has been shown by the work of Ranvier, Howell and Huber, Strobe, Van Lair and Ransom. The multiplied new axis cylinders try to find their way into the distal segment of nerve. Bunker in 1891, Bethe in 1901 and Kennedy in 1904 disagree with the generally accepted doctrine of central regeneration. Clinically at least contact of the distal segment of a cut nerve insures an uninterrupted path for downgrowth of axis cylinders. This has been done by bringing the scar-free ends together by suture.

That it was possible for a cut nerve to reunite was proven by Cruikshank (11) in 1795. Cruikshank removed one inch from the vagus nerve of a dog and by subsequent section of the second vagus after long enough time to allow for the repair of the first he found that the animal lived and that the sectioned vagus had resumed its function. No suture was done. In 1828 Florens crossed the brachial plexus of a fowl using suture material. Baudin sutured nerves in 1836. Bowlby's series published in 1890 records 81 cases of primary suture done by various men with 37 successful results and 73 cases of secondary suture with 32 successes. Schmidt's collected cases to 1900 give 66 per cent cures with nerve suture. Tinel in 1917 states that of 108 cases of nerve suture or grafting which he was able to follow there are 14 failures. These 12 to 15 per cent represent failure. These figures are not from selected cases but include only 22 cases of complete restoration. The statistics from Germany are not available. The operation consists of much more than mere anatomical location and suture of nerves. Therefore the technique of nerve suture will be considered step by step. Most of the war wounds of nerves are complicated by extensive scar tissue. Often at the site of the section of the nerve no anatomical structures can be made out.

Dujarier (12) describes three zones in nerve wounds: (a) neurofibroma, (b) zone adherente, (c) zone libre. The neurofibromata may be of considerable size while the zone adherente may be a mass of indistinguishable scar ten or fifteen centimeters in length. Such damaged nerves can only be found by starting dissection in normal structures in either side of the scar tissue area. The ends of a cut nerve always retract more or less during wound healing and become fixed. This loss of substance can sometimes be corrected by liberating the nerve and exerting mild traction or by manipulating the limb. Stoffel (53) has shown the effect of limb posture on nerves. Schuller (50) states that a four to five centimeter gap in the median may be corrected by nerve stretching. Heile and Hezel (20) state that gaps up to six centimeters may be closed by liberation of the nerve and the position of the limb. Sharp states that posture can correct only four centimeters of such nerve defects. Oftentimes it is necessary to increase the extent of the gap for the reason that intraneural scar tissue must be removed before suture is done. The necessity for the removal of such a scar in the nerve has been emphasized by Dujarier, Delorme and Tinel. Borchardt resects until further resection would

make direct suture impossible and then sutures Nerves showing some scar tissue in section will functionate if sutured Dumas (13) at one time actually advocated using scar tissue as a bridge Failure resulted in every case where this was done Wilms (61) has used scar as a splint in nerve suture but approximates normal nerve ends Dujarier has compared the appearance of scar with that of normal nerve Scar has no fasciculi glists is homogeneous and has little or poor blood supply when compared to normal nerve The nerve has fasciculi that on cross section appear as small circles of hyalin and bleed on section from minute blood vessels The bringing to ether of a nerve without twisting or altering its anatomical relationship is important Stoffel has described a funicular arrangement or grouping of fibers persisting throughout the nerve On cross section the area of each funiculus may represent the supply to some muscle or group of muscles Grouped about the areas of motor fibers are funiculi of other nerves Tinell also dwells at great length on funicular topography These terms funiculi and fasciculi are used to express the same structure

Borchardt says corresponding nerve tracts should be brought into apposition On the other hand Heile and Hezel minimize the importance of such orientation using for an argument that haphazard suture before such orientation was understood brought good results Downgrowth of neurax as seen in Perronico's plates shows in regeneration do not occur in regular columns but often cross in a most irregular manner Schwann thought it improbable that corresponding fibers as before division unite Rawa (48) states that nerve centers can innervate organs which do not belong to them as soon as united by nerve conductors Langley and Anderson (34) Kennedy (30) and Flourens (14) found that one nerve could be cut and sutured to another with resumption of function

There is a variety of suture material Sherren (51) advised the use of chromic catgut as a single through and through suture Thoele (54) uses four epineural sutures of plain catgut Moynihan (40) advocates nerve sheath suture Bonnet (7) compares neurilemma to peritoneum in regard to healing and emphasizes its protective function Schiffbauer uses silk The use of plain catgut is justified by the work of Dustin who claims that the healing of a nerve is sufficiently advanced at the end of four days to hold Ingebrigsten (6) urges the use of 000 vaselined silk thread Vaseline according to Ingebrigsten is not at all irritating to nerves Stoffel and Vulpus (59)

use fine silk or catgut on round needles For epineural suture they advocate the use of blood vessel silk Heile and Hezel speak of puncturing the nerve sheath after suture to allow the escape of exudate Sherren says silk and other non absorbable sutures should be avoided as they may give late trouble Nageotte states the suture must ensure coaptation Crushin ends of a nerve between suture leads to axis cylinders going astray According to Nageotte a space of one millimeter is preferable to the danger of crushin In the choice of instruments Ingebrigsten and Stoffel emphasize the importance of only grasping the nerve by the epineurium when necessary to use forceps They both recommend fine forceps without teeth or serrations Vulpus and Stoffel describe cataract knives for cutting nerves scissors like manicure scissors for freeing nerve thin hooks for raising epineurium needle electrode and tunneller

The blood supply of a nerve is important both from a question of vitality and a question of hæmostasis These statements have been emphasized by Grosse (18)

Dumas raised scar in proximity to a nerve with the idea of conserving blood supply Moynihan cautions against devascularizing nerves Intraneural hæmorrhage is troublesome and difficult to control This has been emphasized by Borchardt Schiffbauer Ljlin er and Lewis Hæmorrhage sometimes has to be controlled by a small hæmostat and fine ligature Dujarier controls intraneural hæmorrhage by means of compresses wet and hot Thoele uses suprarenin and novocaine after operation This procedure is open to criticism because of the opportunity it offers for formation of hæmatomata

The use of the tourniquet for the control of hæmorrhage is a debated question The tourniquet gives a dry field When it is used the tissues rapidly dry out from exposure to the air and unless prevented from doing so will suffer damage Anæmia of a limb lasting over two hours is hazardous The pressure of the tourniquet on the nerve for a period of time greater than two hours may cause paralysis Intraneural bleeding might be masked by a tourniquet and overlooked In addition hæmorrhage and hæmatomata are complications that sometimes occur with artificial anæmia Schiffbauer Thoele Grosse Lorentz and Moynihan condemn the tourniquet On the other hand operation in a bloodless field gives an opportunity to recognize anatomy and avoids the escape of blood Diffuse blood in the tissues interferes with healing Borchardt Gibson and Hoffman favor the use of the tourniquet

Whenever it is possible the cut ends of a nerve should be approximated. When this is impossible some means must be provided for bridging the gap. Various devices have been resorted to. Nerve transplantation, nerve crossing, nerve anastomosis, bridging with foreign bodies and tubular sutures are devices that have been used.

Nerve transplantation should be considered first. Philipeaux and Vulpian (45) in 1869 succeeded in transplanting a piece of lingual nerve into the hypoglossal in a dog. Albert (1) in 1876 transplanted a human nerve from an amputation to a patient. Gluck subsequently revived clinical interest in nerve transplantation.

Several kinds of nerve grafts have been made. They comprise (a) pedicled autografts, suture par glissement (Sicard and Dambin), (b) free grafts, autografts, homografts, heterografts.

Pedicled transplants are too difficult to come into common use.

With free transplants most investigators have expressed a preference for autografts as against homo- or heterografts. Kilvington (32) places success with autografts at one hundred per cent, with homografts at fifty per cent, and with heterografts at thirty seven per cent. Forssman (16) ranks autografts first, homografts second, and heterografts third. Forssman compares the use of heterografts to that of bundles of catgut as being equal. Sherren records sixty per cent success with homografts and forty per cent with heterografts in his series of collected cases. Experimental figures with one hundred per cent of success in the use of autografts cannot be taken as final so far as clinical work is concerned. Large nerve trunks for autotransplants are not available in clinical work. To obviate this difficulty Dean in 1896 used the radial nerve to supply a defect in the musculospiral. Everyone must admit there is a great discrepancy in size and in the number of axis cylinders between the radial nerve and the musculospiral. To obviate this in some measure several strands of small sensory nerves have been used. Literature is not very replete with case reports. Ingebrigsten reports one failure where he had used a single strand. Dujarier and Francois report several failures. Gibson has reported a case with improvement limited to one muscle. Dejerine and Mouson endorse this method highly but do not cite cases to substantiate the claim. Ingebrigsten quotes five cases operated upon by Foerster as being followed by improvement.

Homotransplants exhibit wallerian degeneration. Merzbacher considers wallerian degeneration a vital process closely related to regeneration.

Therefore if heterografts do not undergo wallerian degeneration as claimed by Ingebrigsten there is a reason for the preference in favor of auto- and homografts. A series of twenty cases where homotransplants secured from amputated limbs and stored at 0 Centigrade in vaseline had been done is reported by Dujarier.

These cases have not been operated upon sufficiently long to give definite results. The homograft has the advantage over the autograft in that large sized trunks may be obtained. However Maccabruni (37) found that large nerve grafts become necrotic in the center, whether homograft or heterograft. In portions of heterografts well nourished he found a slightly modified wallerian degeneration. Ingebrigsten's collected cases give one autograft with one hundred per cent success, three homografts with thirty three per cent success, and ten heterografts with ten per cent success. The available records of clinical cases are of slight value on account of the short time between the report of the case and the operation. Sherren's collected records of heterotransplants comprise cases of which 16 were sufficiently late to be of value. Of these one made a complete recovery and six improved.

The experiments with various grafts done on animals up to the time of Huber were unsatisfactory. There is no conclusive evidence in experiments performed by Gluck, Johnson, Assaky, Bunker, Notthaft, or Willard. Huber performed ten heterografts that survived for one hundred and twenty days or more. These filled defects of six to eight centimeters in length and usually were transplants of cat sciatic into the ulnar of a dog. Of these five showed regeneration of motor nerves to all muscles and four showed regeneration of nerves to the muscles of the forearm. These conclusions were reached from making stimulation of the nerve and obtaining muscle twitches and from histological examination.

Ingebrigsten made a study of heterotransplant. He concluded that heterografts did not undergo wallerian degeneration but that they became necrotic, therefore that regeneration could not occur through them. The preponderance of evidence shows that autografts are most susceptible to regeneration but that some regeneration may occur in a heterograft.

Nerve anastomosis or switching a portion of a normal nerve trunk into a degenerated trunk has been described under a variety of terms: nerve grafting, greffe nerveuse, nervenpfropfung, Leteviant made a flap from the central and peripheral end of a divided nerve and united

them This is sometimes used in a variety of modifications but is generally condemned Mac Kenzie (38) claims to have bridged a gap of ten inches by such a procedure Gratzl (17) used this method during the European war and reports successful results Hofmeister (22) switches the proximal cut end of wounded nerves into a normal nerve trunk and then anastomoses the distal degenerated nerves with the same nerve into a slit at a more peripheral point These methods have not been sufficiently established either clinically or experimentally to make any recommendation possible Stoffels' implantation consists in switching a small normal nerve branch into a larger degenerated trunk

Nerve crossing differs from anastomosis in that the entire thickness of both normal and degenerated nerve is cut through and the ends sutured This was done by Flourens in 1828 Ballance in 1895 made application of this in suturing the facial to the hypoglossal The greater number of clinical cases of nerve crossing have been done in connection with the seventh nerve Sherren collected 40 cases of suture of the facial nerve Of these 8 were nerve crossings 6 with the hypoglossal and 2 with the spinal accessory Voluntary motion occurred in all There were 3 cases of anastomosis 20 with the spinal accessory and 12 with the hypoglossal While motor improvement occurred in all the best results so far as dissociation movements were concerned occurred in the hypoglossal series

Kennedy (31) crossed the median and ulnar to the musculospiral and secured full restoration of function By stimulation experiments with the brain he found indications of interchange of cerebral function Kennedy crossed the spinal accessory to the facial in a clinical case in 1899 Langley and Anderson crossed the phrenic to the cervical sympathetic the cervical sympathetic and the recurrent laryngeal the cervical sympathetic and phrenic Stimulation of the sutured nerve gave responses corresponding to peripheral distribution Kilvington divided the sciatic and sutured the peripheral ends of the internal popliteal to the internal and external popliteal Regeneration was considered complete but this was not proven by histological examination Rawa crossed the posterior tibial and peroneal and stated that nerve centers can innervate organs which do not belong to them as soon as united by nerve conductors

Other methods have been used to bridge defects in nerves Various substances have been employed with the purpose of producing either a potential or an actual avenue for downgrowth of

axis cylinders Various absorbable materials have been used in the form of a solid cylinder Other substances less absorbable have been used as a tube This is the so called tubular suture Huber employed bundles of catgut made up of eight No 3 chromicized thread bound to ether with fine catgut With these some regeneration is possible This procedure differs from Assaky's suture a distance In the latter a single strain of suture material was supposed to furnish a trellis upon which the nerve might grow Bone tubes designated as Van Lair tubes consisting of decalcified bone have been used and offer as much success as bundles of catgut Payr (43) advocated the use of magnesium tubes with the idea of keeping an open channel for downgrowth of axis cylinders Formalized calf arteries were prepared by Foramitti (15) and used in a few animal experiments These tubes of Foramitti were employed clinically by Hashimoto and Tokunaka (19) in the Japanese Russian war Their use was in connection with neurolyses and does not clearly establish the value of this procedure

Fascial tubes have been employed by Kirk and Lewis (35) Nerves will grow down these tubes in dogs with re-establishment of anatomical function The few cases reported in literature done by this method have not given definite results especially when operated upon in the presence of scar tissue Starr stated that he had seen several failures from this operation The author of this paper has no knowledge of any successful case but has seen several bad results Kredel (33) also suggested the use of fascial tubes in 1915

The question of reformation of scar tissue when operating in the presence of large cicatrices and consequent strangling of nerves following repair is a very important one In war wounds often enormous masses of scar tissue are in the field of operation So dense is this that wide dissection must be practiced to find the nerves at all To prevent the postoperative compression of nerves various devices have been resorted to These in brief are (a) making a new trajectory for the nerve in normal muscle or subcutaneous fat (b) investment of the nerve with various protecting membrane These include (1) sheath of fascia (2) sheaths of fat (3) veins either autogenous or formalized heterogenous (4) bone tubes (5) magnesium tube (6) galalith tubes (7) rubber tubes and (8) hernial sacs

Lewis suggested fascial tubes Bonnet urged either free fatty graft or hernial sac Borchardt used pedicled fatty grafts as less liable to break

down and become infected Kanavel (29) has successfully used free fat grafts Von Lorentz (58) mentions fatty autogenous grafts Tinel condemns the use of all sheaths except over roughened bone Ingebrigsten in place of investing membrane uses vaseline Bonnet emphasizes the importance of closing any defects in the neurilemma to prevent painful adhesions This he terms isolation of nerve fibers Grosse Auerbach Schiffbauer and Ferrand have transplanted liberated nerves to a new muscle bed Hoffman (1) criticises this procedure and urges investment of the suture line with grafts of fascia Stoffel in his review of neurolysis says results are bad after simple nerve liberation when no wrapping has been done He urges the use of calves hardened veins and peritoneum Bittorf (5) states that fatty sheaths become adherent and he advocates the use of formalized calves arteries and celluloid tubes Auerbach (3) advises tubes of galalith for this purpose Heile and Hezel use rubber tubes Tinel believes that three principles must be observed if scar tissue invasion is to be avoided (a) asepsis or sterilization of the wound that comes only by lapse of time (b) perfect hæmostasis (c) early passive motion Movinhan does not approve of any form of investing membrane

The arguments against investing membrane are (a) that they deprive the nerve of nourishment (b) that they cause increased connective tissue formation (c) that they increase danger of infection (d) that their use prolongs the operation

Neurolysis or freeing a nerve from compression by scar tissue offers many brilliant results The earlier this operation is done the better the outcome Of those reported by Hashimoto and Tokuka 43 in all 25 gave good results roughly varying with the length of time between operation and injury Results of neurolysis after two hundred days were always doubtful Monsaigon reports immediate return of function following liberation of the radial nerve from scar Such results are common Thoele (54) reports 17 neurolyses with marked improvement in 6 cases

The use of investing membranes in connection with neurolysis has been discussed Neurolysis is indicated in simple compression Unfortunately it is not always easy to recognize compression early Tinel (55) differentiated compression from interruption in that in compression muscle tone is not lost and there is a reaction of partial and incomplete degeneration irregular anaesthesia absence of formation and absence of trophic disturbance

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

ASEPTIC AND ANTISEPTIC SURGERY

Plisson Ramond L and Pernet J Study of Streptococcal Wounds (Etude sur les plaies de streptocoques) *Presse méd* Par 1918 *xxi* 393

The streptococcal complications of war wounds have claimed much recent attention from surgeons and at the present time they may be considered as a new morbid entity. The authors therefore think it opportune to report 67 such cases which they have observed.

The streptococci found in wounds originate from the soil from clothing or from the natural skin cavities. The germs are rarely found in fresh wounds. In 56 of the cases the germs could not be found within the first forty eight hours although the wounds were infected. The infection is usually primary the microbe being introduced by the traumatizing projectile. The fleshy muscular parts are those most frequently involved.

The general run of wounds will show the streptococcus in about 23 per cent of cases but in wounds the evolution of which is particularly bad the figure reaches 84 per cent.

When a wound has been surgically cleansed the symptoms vary according as it has been primarily sutured or not. If sutured the onset of streptococcal infection is indicated by pain and thermal elevation. The pain is felt on pressure over the wound. The temperature does not reach its maximum of about 39 until about the fourth or fifth day. The pulse is accelerated but chills are rare. The general picture is that of an erysipelas of the wound wall the lips of the wound being red and swollen with an abundant odorless secretion. The oedema in the vicinity recalls that of phlegmasia alba dolens. According to Gross and Tissier such an evolution never end in a union by first intention hence the general rule to systematically open every sutured wound which has developed a streptococcal infection.

In the case of a wound left open after surgical cleansing a streptococcal infection is recognized from its physical development especially the irregular necrosis of the wounded tissues. Poorly vascularized tissue such as tendons fat tissue etc rapidly becomes gangrenous. The wound edges are inflamed red and oedematous and secretion is abundant and seropurulent. Granulated tissue replaces the necrosed tissue after ten to fifteen days.

Streptococcal wounds while not spontaneously painful are very sensitive to touch. According to the intensity of the general phenomena these

wounds may be classified as slight medium or grave. Those of medium degree are the most frequent. Severe complications or death from such a cause is rare. In the 67 cases observed there were only 2 deaths one due to gaseous gangrene the other a chest wound the death could be ascribed as much to shock as to infection. Recovery by granulation of the wound area is the general rule.

Streptococcal infection may be suspected in every case where the evolution is not clearly favorable. The principal clinical signs have been enumerated none of these are pathognomonic and verification must be affirmed by bacteriology. The authors have used the Sacquepee bouillon for their cultures.

Although it has been generally admitted that streptococcal wounds which have been sutured call for immediate opening the authors have in a limited number of cases maintained the sutures in spite of the intensity of the reactions. In the majority of these cases reunion *per primam* was obtained and the authors think that the practice is without danger where the clinical evolution can be closely supervised.

In the case of a wound left open the use of disinfecting chemical agents has been found powerless against the streptococcus. The evolution is like that of an ulcer. Cauterization dressings or heliotherapy may aid. The authors have found Thiersch grafts to take well. Secondary suture was tried in 8 cases with 6 successes. This was not done until after the third week. Treatment by specific serum by injection of colloidal metals etc has proved valueless.

Prophylaxis is the best method of struggle against streptococcal infection. Minute and early surgical cleaning and lavage is the most potent weapon of defense. W A BRENNAN

Adami J G Bowman F B Adams F and Others Combined Inquiry into the Presence of Diphtheria and Diphtheroid Bacilli in Open Wounds *Canad M Ass J* 1918 *viii* 769

In a careful bacteriological study of open wounds made at three important Canadian medical centers in England there is complete absence of widespread infection of wounds by bacilli diphtheriae. The Toronto epidemic of such infection is the first recorded among the soldiers of the allied powers during the course of this war.

It is well recognized today that non pathogenic diphtheroids are widely spread. Even these while commoner are not frequent inhabitants of wounds. Morphologically and in the early stages cultural

ly diphtheroid bacilli from wounds are many of them indistinguishable from bacilli diphtheria.

Harmless non-toxic bacilli may be present in wounds affording cultures possessing the same sugar formula as regards dextrose, lactose, saccharose and dextrine as does the true virulent Klebsiella Loebfler bacillus.

It is not justifiable therefore to make a diagnosis of diphtherial infection of wounds either from smears alone or from stained preparations and from cultural characteristics. The demonstration that the bacilli produce toxic effects is the result of inoculation of broth cultures alone capable of proving the presence of infection by the true virulent bacilli diphtheria.

By the staining, cultural and fermentation tests four cases of apparent diphtherial infection have been detected in a careful bacteriological study of 306 cases of open wound. By the decisive test of inoculation these are reduced to two.

There is a large amount of evidence showing that even isolated cases of diphtherial infection of wounds are distinctly uncommon among the wounded overseas and complete absence of evidence in Great Britain that the isolated case have acted as foci for the spread of the infection to other wounded men. No evidence is found of spread of infection in open wounds by diphtheria bacilli have been demonstrated in Canadian hospitals or in Great Britain.

Diphtheroid bacilli of any order, while not common are as might be expected more frequent in pen wounds. There is no evidence that these have exerted deleterious effect. There is a certain amount of evidence that particular species of diphtheroid bacilli characteristic of particular localities.

EDWARD L. C. RUSSELL

Hawley G. W. The Carrel Treatment of War Wounds in 1918. *J. Oll.* p. 5, 98.

During the early part of the war practically all wounds were infected and the method of first debridement so successfully employed in industrial surgery failed completely. In the same way and surgical treatment failed hopelessly to control infection no matter how extensively and thoroughly incision and drainage were carried out. Suppuration profound and uncontrolled was almost universal. Gradually it became recognized that all wounds were potentially infected when received and that the infection involved the deep structures. The infective agents were organisms of unusual virulence, the anaerobic bacteria, haemolytic streptococci and the gas bacillus.

Carrel divided the problem of treatment of wound infection into mechanical and chemical sterilization. The former consists in the primary anatomical excision of all traumatic tissues and the removal of foreign bodies. The latter involves the prevention of additional infection in open wounds and the progressive sterilization of the completely open wounds by continuous contact with a chemical

agent which is capable of destroying microorganisms without interfering with normal tissue repair. Carrel's solution is the most successful substance at present.

The aim of surgical treatment today is to secure primary mechanical sterilization with primary wound suture. The operation should be performed within eight hours if possible and not later than eighteen hours after the wound has been inflicted. Cultures of the wound are taken and if haemolytic streptococci, mixed streptococci and anaerobes are found the wound is then re-opened and the Carrel treatment immediately begun. It is obvious that from 10 to 30 per cent of wounds cannot be sterilized by operation and that suppuration should occur in some cases of early treatment. The lesion to submit these cases to Carrel treatment and secure sterilization with secondary closure as early as possible, thereby limiting to a large extent the number of cases especially bone cases which formerly passed on to chronic infection.

Orthopedic surgery has a peculiarly interesting interest in the Carrel method because wounds associated with fracture provide the acid test for any method of sterilization mechanical or chemical. The Carrel method is also important in the treatment of chronic bone infection. Reliable information places the number of cases of chronic osteomyelitis from a fracture at 0.000 in France alone. It is these unfortunate that orthopedic surgery will be called upon to treat in the future and the Carrel treatment is the most promising method at present.

J. J. K. LANDER

Ehrenpreis Primary Suture (D. L. E. O. P. M. 1) P. 5, 4d P. 98, 39.

Ehrenpreis says that the present tendency is to avoid primarily suturing the most severe type of wound. In a first period June 1916 to July 1917 the proportion of wounds so treated was 25 per cent. (a) solitary wound of the soft parts 40 per cent. with either primary or deferred primary suture 3 per cent. secondarily sutured or sutured (b) multiple wounds of the soft parts 6 per cent. with either primary or deferred primary suture 40 not sutured (c) osseous 11 primary sutured 110 15 17 out of 1 knee arthroplasties of 8 elbow arthroplasties 32 craniectomies 3 femoral fracture 0 1 of 41.

In a second period July 1917 to February 1918 95 per cent of soft parts wounds were primarily sutured and 6 per cent of the multiple soft parts wound.

The indications and contraindications depend on the factor. First since it is not an operation of necessity it needs detailed postoperative supervision by the surgeon for from ten to twelve days. If the number of the wounded is high and does not permit the surgeon to devote the time necessary to each then this method is not indicated. Secondly the primary excision and clearance must be minimal and long and can only be properly done when there is

no active fighting in the section. Local contra indications are given by any signs of infection in multiple wounds etc. Outside of these conditions the state of the wound or its extent or gravity are not contra indications of the method.

Although the time elapsed since injury is an important factor regarding infection yet no absolute period of time can be stated outside of which primary suture ought not to be done. The true contra indications result from the local and general clinical signs. When the surface appears normal without varicosities or redness about the traumatic orifices when there is neither lymphangitis nor adenitis when the general state is good showing no signs of shock or infection then suture may be proceeded with if the other conditions referred to exist.

The perfection of the operative technique is the primordial condition on which success depends. There must be complete and minute exploration of every part of the wound. This must also be done with the least possible amount of traumatism. Even the gloved finger must not be introduced into the wound or tissues without strict necessity. Blind maneuvering with the finger among the tissues to seek a projectile is extremely injurious to them; moreover in dealing with the tissues it is better to use the knife than the scissors which crush as well as cut and when possible it should be under screen control.

The removal of tissues should follow these rules: (1) The incision for the cutaneous and subcutaneous excision should be elliptical and encroach 2 to 3 mm into the healthy tissue. (2) The treatment of the muscular tissue is the most important part of the technique because the difficulty here is to resect what is necessary without removing too much. The muscle should never be cut perpendicularly to its fibers; it is unphysiological and surgically wrong in order to reach the fibers sectioned by the projectile it is necessary to pass between two fasciculi in such a way as to expose all the traumatized area with its diverticula but the sacrifice must stop as soon as the tissues appear healthy and normal.

Vasculonervous lesions should be treated as other tissue, i.e. the first condition for a nerve suture is an economical resection of all tissues liable to necrosis and for a vascular lesion the free excision of a damaged part of the vessel.

Fracture cases can be sutured provided the traumatized area is inspected and cleansed but if the least doubt exists regarding the perfection of the operation it is better to wait for a delayed primary suture.

Cranio-cerebral wounds are admirably suited to primary suture leaving only a small opening through which the expulsive force of the brain may discharge products of cerebral disintegration or minor loose fragments which may have escaped during operation.

Delayed primary suture viz on the second third

or fourth day is particularly indicated when a thick muscular bed has been cut by the projectile or when a large amount of muscle tissue has of necessity been removed in the course of the operation.

The author gives details of the operative technique and of the postoperative care of the wound.

W. A. BRENNAN

Gibson C. L. Surgical Treatment of War Wounds

N. 1 St J Med 1918 LVIII 345

The author has had an opportunity to observe the treatment of war wounds in both the British and French armies. The accepted method of treatment as practiced by the Allies on the western front aims at the radical excision of all open wounds removal so far as feasible of all foreign bodies and the complete removal of all bruised infiltrated damaged or shocked tissue. Operations done on this principle by competent surgeons give the surest guarantee against the development of all forms of sepsis particularly gas gangrene.

In the British army this work is done usually at the casualty clearing stations which are situated about ten miles back of the lines. The patient is brought here in a carefully warmed ambulance usually under a sufficient amount of anodyne to diminish shock. He is carefully unloaded in a waiting room which is well warmed and protected from drafts and then sent to an examining room where the surgeon investigates his wounds and decides on the method of treatment.

Where the condition of the patient is too precarious to warrant immediate operation he is sent to the resuscitation ward. Emphasis is placed on the importance of heat in the treatment of this condition. When the patient has recovered to a state where he can stand operation he is returned to the operating room.

The English do their major operating in one single operating theater whereas each French surgeon has his own cramped and very small operating room. The patients are for the most part given general anæsthetic. The skin is disinfected by mechanical cleansing with soap and water and five per cent alcohol picric acid solution.

Where the stress of work is not too great X-ray examinations are made of each case. The French have developed their fluoroscopy and other means of foreign body localization to perhaps a higher degree than in the British.

After operation the patients are returned to the wards most of them to be evacuated on the first hospital train if their condition permits. Head, chest and abdominal cases are usually kept at the casualty clearing station for one week. At the base the wounds are redressed and packing removed at a varying time usually from five to six days. It is stated that the condition of the wound usually allows of early suturing in layers and that the results are generally good but the author had no means of corroborating this statement from personal experience.

In the French army primary suture of these wounds is done more freely than in the British army and considerable reliance is placed on cultures. If the culture shows streptococcus or bacillus perforans the wound is immediately opened and treatment by the Carrel or some other open method instituted. With the French army this means a closer relation between the evacuation hospital and the bases. The French like to have the base hospital only a relatively short distance away. It is the belief of the best surgical minds in France that a hospital situated at a point farther away than forty to sixty kilometers does not really perform the function of an acute hospital but rather that of a convalescent home.

C. W. HOCHRE

ANÆSTHETICS

Mills A. The Administration of Anæsthetics to Soldiers. *B. I. M. J.* 9 8 1 343

The nervous system of the young soldier is by no means stable. He reflects a very sensitive and he is nearly always a heavy cigarette smoker.

In such case induction of anæsthesia with chloroform is strongly contra-indicated. With chloroform a large majority of these men develop excitement and struggling and spasm of the limbs and respiratory muscles. If at the moment of onset of such a state of spasm a strong chloroform vapor has been inhaled it may be retained in the pulmonary alveoli for a considerable time the percentage of chloroform in the circulating blood may be raised to a toxic degree and fatal symptoms may appear while the cornea are still sensitive. The heart gives way before breathing can be re-established.

It is doubtful whether a mixture of chloroform and ether is safer than pure chloroform during the induction period. If any anæsthetic effect is to be obtained from the ether element in the mixture it must be excluded to some extent and exclusion of air is not permissible if the chloroform element be present in any degree.

Induction with pure ether is attended in these cases with considerable difficulty.

Nitrous oxide gas produces too light an anaesthesia to form a satisfactory prelude to ether.

The author has come to the conclusion that an ethyl chloride ether sequence is the best method one can adopt for induction. He has used an inhaler for several years for ethyl chloride devised by Loosley. To have a stopcock filled to the foot of the bag and this connected by rubber tubing with an ether bottle and bellows is an easy matter and this forms the simple apparatus which he used in giving ethyl chloride ether sequence.

About 3 ccm of ethyl chloride is sprayed into the bag through the valve. The valve opens when the nozzle of the ethyl chloride tube is pressed against it and closes automatically immediately after the nozzle is withdrawn. A tube below carrying the discharge well away from the face piece. The face piece is applied to the patient's face and the lever of the stopcock kept in the down position so that the first few breaths of the patient are turned into the bag until it is about half full. The lever is then pulled up and toward the face piece and the patient breathes a diluted mixture of ethyl chloride vapor and air. The vapor is then strengthened by spraying a little more ethyl chloride through the valve and still a little more until anæsthesia is produced.

Using ethyl chloride alone the anæsthetic can be pushed until the usual signs appear: fixed eyeballs, dilated pupils, and insensitive cornea before removing the face piece and a good minute and half or more of satisfactory anæsthesia without a trace of cyanosis will be obtained. The strength of ether vapor can be varied in any limits by varying the degree of vigor of pumping and by the admission of more or less air at the face piece.

The author is convinced that the previous hypodermic $1\frac{1}{2}$ gr morphine and $1/10$ gr atropine is of considerable value.

A. C. HUNT

SURGERY OF THE HEAD AND NECK

HEAD

Bevan A. D. Hemangioma of the Scalp. *S. G. C. J. Ch. C. G.* 9 8 7 3

Bevan reports the case of a child ten months old dying from hemorrhage from an ulcerating hemangioma of enormous size involving the entire right side of the skull and neck. The hemorrhage had persisted for ten days and could not be controlled by pressure which is sufficiently firm simply to tend the ulceration. The bleeding surface presented on the back of the neck and behind the right ear.

The treatment carried out consisted of the ligation of the right common carotid artery followed by

ligation of the internal jugular vein on the same side. This was deemed advisable in spite of the risk of cerebral anæmia, the resultant necrosis.

The patient made a good operative recovery without developing cerebral symptoms. The hemorrhage from the ulceration ceased. The thick spongy hemangioma changed very perceptibly in character within twenty-four hours to a hard firm mass caused by the coagulation of blood in the large vessel spaces in the tumor. The coagulation extended throughout the entire mass with the exception of a small area at the upper and inner angle of the right eye. The ulcerated area healed slowly.

The hemangioma of the upper and inner angle of the orbit was successfully treated by injection of

boiling water. When the child left the hospital this part of the hæmangioma had almost entirely disappeared. L. H. LANDRY

Morestin H. Reconstruction of the Eyebrow
(Reconstitution du sourcil) *Bull. et mém. Soc. de chir. de Par.* 1918 xlv 1452

The first attempt to reconstruct the eyebrow was made by Jobert in 1834. He called it an ophryoplasty. He used a strip of the scalp cut in the temporal region to fill the gap. Morestin in some war wound cases found this technique useful. In a recent case he has used a strip from the hairy scalp cut in the frontal region and he thinks this is best suited for the purpose. The strip was cut with its base toward the nose, extending from the middle of the forehead and coming to an apex well inside the hair line. The pediculated strip was then turned so as to cover the eyebrow region, the hairy part being disposed as required. The autoplasty could not be made so well by cutting a strip in the temporal region. W. A. BRENNAN

Fischer L. The Superior Longitudinal Sinus in Infants. Its Value in Transfusion and for Rapid Medication. Its Adaptability in Procuring Blood for Diagnosis. *Med. Rec.* 1918 xci 399

The author believes that by the use of the longitudinal sinus a direct channel is provided through which small or large quantities of blood can be rapidly taken from or added to the circulation in infants. By this method shock is minimized as well as infection. This route he believes is also adapted for procuring sufficient blood in the most rapid manner for blood culture as well as for the injection of sodium bicarbonate in cases of acidosis.

The sinus can be entered through the anterior fontanelle until the second year of age. It grows wider toward the back of the head. The needle is pushed through the posterior angle of the fontanelle; it should be directed downward and backward in line with the sagittal suture as the sinus lies very superficially there is no need to go deeper than one or two millimeters. A needle half an inch long of a No. 22 gauge with a sharp point is best adapted.

As there is negative pressure within the sinus before injection it is better to withdraw blood thus making certain that it is actually in the sinus.

Saline or silversan solution or any fluid is best given by gravity and should be given slowly. During the injection the infant should be closely watched and its color, pulse and respiration noted. Vincent warns against too rapid injection as increased intracranial pressure caused vomiting and disturbed respiration which corrected itself as soon as the flow of blood was checked temporarily. Air pressure in the tube should be released by detaching the syringe before the needle is withdrawn. The author claims that there is no danger of losing too much blood by the puncture even though the needle is a large one.

In the summary Fischer claims that the longitudinal sinus shows itself to be the largest venous channel in the body. With this method neither local nor general anesthesia need be given. The technique is simple. Aseptic principles should be applied and the skin thoroughly cleansed with soap and water; then tincture of iodine should be applied. F. C. ROBITSHKE

Roy D. Some Observations on the Diseased Conditions of the Salivary Glands and Their Ducts. *Med. Times* 1918 xlv 225

This is a subject to which too little attention has been paid in the past. The author gives a short concise review of the anatomy and physiology of the salivary glands.

The oral salivary glands are divided into two groups, the more important group constituting the three large pairs of salivary glands, the parotid, submaxillary and sublingual. There are numerous smaller glands such as the labial, buccal, palatine, molar and lingual. The parotid is the largest of the salivary glands and is situated in front of the lower part of the external ear, extending as high as the zygoma and as low as the angle of the lower jaw. This gland is important not only on account of its function but because of the relation it bears to the surrounding parts and important structures found within the substance of the gland, such as the facial nerve, temporomaxillary, superficial temporal, internal maxillary and posterior auricular and auriculotemporal nerves. Stenson's duct is the duct of the parotid gland and runs transversely across the face about one half an inch below the zygoma.

The submaxillary gland is the next largest of these glands and is situated in the submaxillary region below the lower jaw and above the digastric muscle. It is in close relationship with the infra-maxillary branches of the facial nerve, artery and vein and hypoglossal nerve. Its duct is known as Wharton's duct which has an opening on each side of the frenum of the tongue on a distinct ridge of membrane half way between the tongue and the teeth.

The sublingual is the smallest of the salivary glands. It is lobulated and lies immediately below the mucous membrane of the floor of the mouth at the side of the lingual frenum and produces an oblong eminence distinctly seen when the tip of the tongue is raised. This gland has no common duct but its secretion is poured into the mouth through ten or fifteen small ducts which are known as the ducts of Rivinus.

The secretion from the parotid is rich in ptyalin which makes this gland exceedingly important as the producer of this digestive ferment. The submaxillary and sublingual glands produce mucin and are important in producing a secretion for the lubrication of food.

He calls attention to the pathologic conditions associated with these glands. Mumps is the common

acute inflammation of the parotid gland. There are many cases of tenderness over the parotid gland accompanied by a little enlargement of the gland which are due to stenosis of Stenson's duct. This stenosis may be due to a swelling of the membrane lining the duct or to the presence of calcareous concretions in the duct. He mentions the frequency of partial or complete deafness following mumps.

What he has said of the parotid applies to the submaxillary and sublingual glands. Acute infection of the submaxillary gland accompanied by suppuration occasionally meets with it. He cites the case of a man of twenty-eight with severe pain on the right side of his throat swelling and painful deglutition. The author believed it to be a case of tonsillitis with probable peritonsillar abscess. On examination he found a large amount of pus extruding from the right of Wharton's duct beside the frenum. Pressure on the submaxillary gland on that side elicited great tenderness. An attempt was made to treat the case by evacuating the abscess through the natural duct in conjunction with hot poultice but as unsuccessful. The suppurating gland was later removed and the patient went on to an uneventful recovery.

He cites another case of a woman of sixty-eight who consulted him for what supposed to be a cancer of the floor of the mouth. Underneath the tongue was a large salivary calculus filling the opening of the right submaxillary duct. It looked like a funous warty growth. The patient made good recovery after removal.

Chronic conditions of the submaxillary salivary gland usually manifest themselves by obstruction of their ducts. If the obstruction continues for any length of time there is formed a large sac in the floor beneath the tongue which is known as a ranula. A ranula does not produce pain but simply discomfort. The treatment is according to the size. Small ones disappear when the calculus obstructing the duct is removed. Where the ranula has existed for some time and the large dilated sac filling the floor of the mouth nothing short of destruction of the sac or the production of a permanent fistula will be sufficient to cure the case. One method used by the author that introduced by Brown of Milwaukee consists in making a permanent fistula by running a silver wire through the sac clamping it with a lead shot and leaving it in for months. It can be done under cocaine and the wire can be carried by the patient with practically no discomfort.

Another method introduced by the author following the work of Gifford of Omaha is to open thoroughly the ranula sac under cocaine and to open out the cavity with normal saline and then with a small piece of cotton on the end of an applicator which has been dipped in pure trichloroacetic acid. The whole interior of the sac should be cauterized thoroughly with this solution. This may have to be repeated several times but in the one case reported by the author the results were excellent.

G. W. HICKEY

Blake J. B. Recurrent Dislocation of the Lower Jaw

Blake reports an interesting case of recurrent dislocation of the lower jaw. The patient a man of twenty-seven had suffered dislocation of the jaw many times. As a result he gradually became unable to laugh or yawn without dislocation. He could not sleep without imminent danger of waking to find his mouth wide open and his chin fixed upon his chest and would be compelled to seek immediate surgical aid. His jaw was reduced at the Boston City Hospital Relief Station where he lodged at least 40 or 50 times and sometimes more than once in the same night. He had tried bandage but they were of no avail possibly because he did not wear them long enough for a fair trial operation as the only form of treatment that offered hope of success.

A careful examination impeded the operator with the dislocations of the attack of the joint itself a condition so marked as this and remembering the familiar method by which the lower jaw bone is held to the skull in the mounted skeleton (a prong tacked above to the temporal bone and below to the coronoid process) he concluded that something of this nature might be effective that is that the coronoid process be bolted to the bony skull and the zygomatic arch suggested itself a glance at the obvious anchorage.

The patient agreed to the operation on understanding that he must assume some chance. Nevertheless seemed to be no precedent for the procedure. An incision was made along the lower border of the zygomatic arch and the fibers of the masseter separated from it. This incision was well above Stensen's duct and parallel to the facial nerve fibers. With some difficulty the coronoid process was reached. It was much deeper than had been anticipated and the operator was not able to do what he had originally planned. This led to drill through the tip of the coronoid thread a piece of wire through the hole and leave this over the zygomatic.

The silver wire was looped first over the zygomatic and then brought down and carried through the insertion of the temporal muscle and the periosteum on the front of the coronoid the ends twisted together flattened and the wound closed without drainage. The wire loop was long enough to allow the jaw to open for some reason between the incisions. The masseter was carefully sutured to its original position and the jaw closed and the wound healed by first intention. The jaw was immobilized three weeks.

For some time the patient would not open his teeth more than a centimeter for fear that the jaw would slip but he gradually gained confidence and a wider range of motion returned. A year after the operation the jaw became normal and reliable every day. The x-ray shows that there has been no displacement from its original position but it does not cause any discomfort and gives a mental sense of security to its possessor.

M. N. F. E. S. P. I.

Tuffier T Faure J L and Morestin H Report upon Cranial Losses of Substance (Rapport sur une question au sujet des pertes de substance du crâne) *Bull et mém Soc de chir de Par* 1918 *div* 1346

The question proposed to the Surgical Society of Paris by the State Department of Health was as follows. In the case of a soldier with a cranial breach not exceeding the size of a five franc piece and entirely crowned by a cartilage or bone graft which appears solid and resistant should such a man be considered as suitable for a retiring pension? If not what degree of incapacity should be attributed to the infirmity?

The Commission finds that in general a cranial breach cannot be separated from the complications which habitually accompany this lesion and which may not become manifest until a long period has elapsed. Moreover the size of a cranial breach is no indication of the actual damage done internally.

From the medicolegal standpoint no matter how excellently a cranial defect has been repaired the cranium is not normal and a man who has undergone a cranioplasty should not be deprived of his right to a retiring pension.

If a period of at least three years has elapsed since injury and operation and recovery has been apparently permanent with no appearance of functional disturbances a retiring pension need not be allotted but a loss of from 10 to 25 per cent of capacity may be considered as the equivalent of a defect.

In estimating the degree of incapacity the encephalomeningeal lesions and the functional disturbances which are possible must be taken into account. There is besides the liability to accidents.

W A BRENNAN

McArthur L L Tumor of the Pituitary Gland. Technique of Operative Approach. *Surg Clin Chicago* 918 1 691

The technique of the above named operation is as follows. Shave the frontal region and the eyebrow on the side to be operated and prepare the field. The incision is made from the outer edge of the eyebrow to the bridge of the nose perpendicularly up across the forehead to the hair line and then in the hair line to a point three inches or so outward and opposite and above the point of beginning. Dissect back all soft tissues including the periosteum and reflect these laterally.

At the upper inner angle of the exposed frontal bone drill a small hole through the bone and insert a DeVilbiss forceps make a curved cut from this hole downward to the inner angle of the orbit and another from the hole outward and downward to the outer angle of the orbit. With a circular saw divide obliquely the supra orbital arch. Loosen the perosteum from the roof of the orbit. Pry out the fragment of the bone outlined and with it will come a greater part of the roof of the orbit leaving the perosteum to protect the structures of the orbital cavity.

Place the piece of bone removed in warm sterile salt solution. With a small rongeur forceps bite off the balance of the roof of the orbit back to the exit of the optic nerve. The contents of the orbit can be depressed and the frontal lobe elevated with a spoon or other retractor so that the entire free edge of the wing of the sphenoid can be felt with the finger and the anterior clinoid process recognized. By gentle sponging and handling the opposite optic nerve can be brought into view. Locate the anterior margin of the sella turcica and make a transverse incision in the dura one centimeter in front of the position of the chiasm. Some of the cerebrospinal fluid will escape enabling the operator to see the horizontal diaphragm of the dura covering the pituitary body when normal.

When a pituitary tumor is present there will be a convex elevation of the same distended and pushed upward by the tumor. After removal of the tumor no attempt is made to suture the dura. The bony fragment is replaced and the periosteum sutured over it. A small silkworm gut drain is placed at the lower inner angle of the orbit.

P W SWEET

NECK

Scalone I Surgical Considerations on Cervical Rib (Nozioni chirurgiche sulla costola cervicale) *Chir d organ d mo* Bologna 1918 11 75

Scalone reports the clinical details of a case of a left cervical rib articulating with an apophysis of the first rib irritating the brachial plexus and exerting pressure on the subclavian artery. The cervical rib was resected.

Scalone makes a general review of the surgical aspect of cervical rib. He classifies it into these types:

- 1 Those which do not extend beyond the transverse apophysis of the vertebrae to which they belong.
- 2 Those which extend beyond the anterior margin of the posterior scalenus muscle (with disturbances of nerve plexus).
- 3 Those whose extremity reaches the anterior scalenus muscle (with the same disturbances as the preceding adding that of the subclavian artery).
- 4 Those which pass beyond the anterior scalenus muscle and reach the sternum as in the case of those completely developed (with the foregoing disturbances).

With regard to the method of termination of the anterior extremity and the connections with the underlying rib they may be (a) mobile or (b) fixed to the underlying rib with connections muscular fibrous osseous or articular.

These types and the nervous and vascular disturbances arising in consequence are described in detail. Without entering into a discussion of the various theories to account for the manifestation of these symptoms the author is convinced that some irritative traumatic element plays an important part. In his own case the onset of the disturbances

was due to military exercises. He thinks that there are many cases of cervical rib which give no symptom of their existence and in nearly all cases operated upon the complications occurred late in life and usually after fifty years of age. The existence of a cervical rib may be revealed by the progress of some pathologic process such as a fracture tumor etc.

Regarding the operative technique the first type of cervical ribs which do not extend beyond the transverse apophysis of the corresponding vertebra have little surgical interest and the relation existing between them and deep lying organs of the neck are such as do not cause disturbances.

Removal of at least that portion of a cervical rib extended behind the posterior scalenus muscle is necessary when there are disturbances referable to this segment otherwise it might be preserved. A total resection is not necessary unless there is some positive indication.

Owing to the dangers of an extrapleural removal and the equally good results obtained from subperiosteal removal the author believes this latter method to be that of choice. When the relations with the subclavian vessels are very intimate a temporary section of the clavicle may be called for as in operations in the subclavian axillary region.

W. A. BRENNAN

Loeb L. Multiple Transplantations of the Thyroid and the Lymphocytic Reaction. *J Med Res* 1918 9:8 xxx No.

In former investigations Heselberg and the author studied the fate of the thyroid in cases of successive transplantation of the thyroid into the same host. He found that in contradistinction to transplantation of certain tumors a definite effect of the first on the second transplant could not be established. Loeb wished now to report on experiments in which he tried to enforce the effect of the first transplantation by simultaneous transplantation of a number of lobes of thyroid. It is possible that the quantitative increase in tissue inserted at the time of the first transplantation led to a more marked effect on the second transplant. In other experiments he studied the simultaneous transplantation into the same host of a number of lobes of thyroid derived from different animals in order to determine how far the lobes from different animals maintain their individual reaction under the conditions of multiple transplantation.

The following conclusions may be drawn:

1. In multiple transplantation of the thyroid the two lobes of thyroid derived from the same donor behave in a certain number of cases alike and differ in the reaction from the thyroid derived from other donors and transplanted into the same host. In other cases the difference between the conditions of the different pieces is not distinct.

2. Even in cases of multiple transplantation of the thyroid the appearance of the lymphocytic reaction in the second transplant is not noticeably accelerated over control cases in which a first trans-

plantation had not been carried out. This is especially clear in cases in which the second transplant and the control had remained in the host during a period of three or four days.

3. In a considerable number of cases of multiple transplantation the first transplants were found entirely or to a great extent destroyed or in a relatively bad state of preservation. If a number of thyroids taken from different animals are transplanted into the same host the difference in the constitution of these thyroids might by chance have been small as compared to the other factors which all the transplants have in common such as the injury connected with the experimental interference, the condition of deficient nourishment during the first days following transplantation and the character of the host and the animals selected as donors might happen to differ only slightly from each other in the character of the individuality differentials. Yet in a number of cases the difference in the behavior of the lobes derived from different individuals is quite marked while the lobes obtained from the same individual are so similar to each other as to permit the conclusion that the differences in the individual differentials are maintained even after multiple simultaneous transplantation and lead to difference in the reaction on the part of the host toward the transplants. In some cases the differences between the thyroids obtained from different animals are very marked indeed in others they are less so.

The strength of the lymphocytic reaction varies accordingly. It can be very marked around some thyroid and be almost lacking in others. In regard to the second transplants those removed at an early period are more conclusive than the later ones. From the seventh day on the lymphocytic reaction is often very marked even in the control but on the third and fourth days after transplantation this is not yet the case. One should therefore find conclusive evidence of the effect of the host transplant on the second especially in such second transplants which were taken out at an early period after transplantation. In confirmation of previous results they found that three and four days after transplantation the second transplants did not show a noticeable increase in the lymphocytic reaction over the controls neither did the behavior of the connective tissue or the preservation of the connective tissue markedly in second transplants and controls.

They conclude therefore that the multiple transplantation of thyroid does not increase the lymphocytic reaction in the second transplant more than the single first transplant on previous experiments did and that absence of a lymphocytic reaction in a second transplant may be associated with a decided lymphocytic reaction in one or several of the first transplants. The thyroid retains the individuality in the host and each call forth a reaction on the part of the host which is only very slightly or not at all influenced by the reaction of the host toward the other transplant.

The author concludes with the following summary

1 In multiple transplantations of the thyroid the individuality differentials of the thyroids of different animals are preserved. They may find expression in a reaction of the host toward the transplant which is similar in the case of lobes derived from the same animal and differs in the case of lobes derived from different animals.

2 The lymphocytic reaction in the second transplant is not markedly accelerated or intensified over control transplants even in cases in which the transplantation had been multiple. This is especially noticeable in experiments in which the second transplant had remained in the host during a period of three or four days.

3 In a considerable number of cases of multiple transplantation the first transplants were found largely or completely destroyed. It is at present uncertain to what extent this is due to unfavorable conditions of a more or less accidental character or to the production of immune substances.

4 The author's results make it very probable that the lymphocytic reaction is in part at least a response of the host to primary homotoxins and that it is not entirely the result of the development of immune substances. It is probable that the cell constituent which directly or indirectly gives rise to the original formation of homotoxins may also act as antigen and call forth the production of immune substances which after combination with the antigen act on the host cells in a way similar to the primary homotoxins.

GEORGE E. BEILBY

Reede E. H. Toxic Non Exophthalmic Goiter V. M. J. 1918 CIV 432

Toxic non exophthalmic goiter is clinically a neurosis of the parasympathetic nervous system accompanied by perversions of metabolism and accompanied by a goiter the pathological characteristics of which include a primary retention of colloid with atrophy of epithelium and often a regeneration of epithelium.

Parasympathetic nerve irritability is essentially a relative predominance of that system over its antagonist the true sympathetic system and may lie in an innate inferiority of that system or the endocrine glands that reinforce it or in an acquired exhaustion of the sympathetic system and its related glands through toxic psychic or metabolic factors which depress this true sympathetic system. Excess of thyroid secretion *per se* has neither a vagotonic nor a sympathetotonic effect inasmuch as its sole effect is that of a tissue metabolism accelerator and only exaggerates the pre-existing type of nerve system superiority.

Kendall by feeding to animals intravenously the amino acids and the active principle of the thyroid gland has obtained a symptom gradient which at the apex shows a stimulation identical with the accepted picture of the heightened metabolism termed hyperthyroidism and at the base a perva-

sion of metabolism with depression. From his investigation Kendall concludes that Thyroid activity in the absence of a simultaneous suprarenal cortex activity does not produce the usual so called hyperthyroid symptoms but instead a condition of depression.

The author of this article attempts to draw an analogy between the groups into which Kendall's animals fall and the groups into which the cases of non exophthalmic goiter may be divisible on the basis of blood pressure and nervous symptoms in ferring as a premise what has not yet been proven by the calorimeter that predominance of the parasympathetic nervous system is accompanied by a slowing or perversion of metabolism in contradistinction to the acceleration of metabolism which obtains in the suprarenal sympathetic stimulation exemplified by exophthalmic goiter.

Following the blood pressure classification of Plummer of Rochester toxic non exophthalmic goiter cases fall into four groups viz (1) constantly toxic high pressure where the pressure reaches 150 and over (2) intermediate pressure constantly toxic from 130 to 150 (3) constantly toxic low pressure below 130 (4) inconstantly toxic low pressure where the toxicity suffers remissions.

The decision of a symptom being parasympathetic is based upon the clinical description of the effects of parasympathetic stimulation offered by authors on vagotomy and physiologists and is not based on the pharmacodynamic reactions in these particular cases.

The author distinguishes between the hypertrophy of the gland termed goiter and the toxic state following oversecretion. He reiterates his earlier expressed statement that the majority of goiters have their origin in childhood as a reaction to a neighboring infection analogous to lymph gland hyperplasia and that oversecretion occurs only in the presence of three factors later active in the body which are either toxic metabolic or psychic or a combination of these. He admits the possibility of a non hypertrophic gland reacting toxically to these stimuli but seems to doubt its probability.

He includes among toxic stimuli recurring neighborhood infections distant focal infections and general systemic infections and suggests that the increased metabolism incited by the infection may be a factor. Among metabolic stimuli are the demands for tissue activity arising in connection with the institution of puberty the periodicity of menstruation the changes of pregnancy and the menopause and the maturation of the male gonads. The psychic stimuli include not only those conscious emotions arising from blocking of the primitive instincts but also those effects radiating from emotions which have been displaced through repression below the level of consciousness.

The symptoms which occur are in part the directly related expressions of the original toxic metabolic or psychic cause in part the reflection of related diffuse metabolic disturbance in part the in-

teraction of other endocrine organs but in the main they are the expression of parasympathetic nerve dysfunction

Group 1 or the high pre-sure toxic type simulates the exophthalmic particularly when naturally prominent eyes or much periorbital puffiness are present but differs radically in its tendency to chronicity. Early symptoms are sympathetic in part and parasympathetic symptoms appear only on exhaustion until late. One is apt to find in this group (a) an active focus of infection (b) a psychic repression of potency (c) an increased metabolism and (d) much mental tension.

Three stages characterize the duration of this process (a) a scular stimulation (b) fixed vascular hypertension where the picture is that of a primary hypertension with cardiovascular complex and (c) cardio-vascular degeneration in which to the usual picture of arteriosclerosis and myosclerosis is added a pigmentation, anasthenia and a mental and motor slowing suggesting the Addison type of endocrinopathy. Some of these cases improve under thyroid medication.

Group 3 or the constantly toxic low pressure type includes the case of paramont interest and are the cases which furnish the reason for the appearance of the paper. The symptomatology is luxuriantly that of an effunctioning parasympathetic nervous system which consistently through the individual's life during stress expresses itself prominently in some particular area of organic distribution. The bodily incapacitation is highly follicular presents the great energy expenditure which characterize exophthalmic goiter and the picture that of a fatigue neurosis tend of a cardiovascular erectile system. Consideration of these cases requires on the part of the observer first an adequate conception of the effect on each organ of parasympathetic stimulation secondly some knowledge of the physiological variations of the individual which are considered normal in the epochs of puberty adolescence pregnancy the menopause etc and thirdly an elementary acquaintance with the mechanism of personality as determined by the phylogenetic instincts in the recognition affective and conative aspects.

Group 4 includes cases which combine a tendency to cardiovascular degeneration with more or less of the symptomatology of Group 3.

Group 4 comprises cases resembling Group 3 in high period of normal health intervening between the nervous breakdown many of these cases are associated with the adenomatoides led by Goetsch.

Regarding treatment the author's attitude depends on his custom in the exophthalmic complex here he advocates thyroidectomy in the pre-exophthalmic stage and here he delegates the operation to third place.

In non-exophthalmic toxic goiter he advises first the removal of focal infection secondly the relief of psychic irritation and finally as a final measure bilateral lobectomy. Presumably the relief of psychic irritation could be attained by psychoanalytic means.

In reference to prophylaxis the author reiterates his belief in the initiation of hypothyroidism in childhood in association with cephalic extremity infections particularly those of the gingivae and invites more attention to the toxic and psychic traumatism of puberty and adolescence as remediable factors in late hyperthyroidism.

It may be noted that he fails to mention in reference to the infection theory of goiter the recent work of Wilson which suggests that the infection acts through ganglionic change in the ganglia controlling the secretion of the thyroid.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Sibertson C. The Value of X Rays in the Treatment of Malignant Diseases of the Breast
P. 145 98 337

The case falls into three main groups (1) those sent for prophylactic treatment following operation (2) recurrences and (3) inoperable cases.

Patients for prophylactic treatment should be sent to the radiologist as soon as possible after operation. It is essential to administer large doses of X rays and the rays are measured after filtration through 2 or 3 mm of luminum. The scar over the axilla supraclavicular and postscapular areas should all be treated. The method of cross fire enables a large quantity of rays to reach the mediastinum. The radiation is greatly facilitated by using the Coolidge tube. In ordinary cases the first course of treatment lasts about three months. A second

shorter course is given after two or three months and subsequent radiations are administered at gradually lengthening intervals.

Local scar recurrences are rare but if nodules appear they can with rare exceptions be controlled. It is possible to prevent gross enlargement of supraclavicular deposit and they frequently disappear after vigorous raying. They never break down and ulcerate. It is curious how often one meets the recurrence in the lumbar spine.

Swelling of the arm from lymphatic obstruction is occasionally a troublesome and distressing sequel of operation. Usually it becomes progressively worse and the limb sometime reaches an enormous size.

The general conclusions arrived at from treatment of cases in this group are as follows.

1. The patients are likely to have a recurrence of the disease in cases not so treated.

- 2 Local recurrence in the scar area is rare
- 3 Supraclavicular deposits do occur but can as a rule be controlled
- 4 Mediastinal recurrence appears to be less frequent

5 The general health of the patient is improved
In recurrent cases much can be done to relieve pain and prevent ulceration by efficient treatment in some cases brilliant results are achieved. Foul ulcerating surfaces heal up. Large masses of glands disappear and a symptomatic cure is obtained.

All inoperable cases should be given the chance of deriving benefit or amelioration of symptoms by X ray or radium therapy and frequently both methods are used. Very often what appear to be most hopeless cases do the best and vice versa. When patients are already cachectic little can be done beyond giving them some relief from pain. Malignant growths are affected by radiation both directly and indirectly. Research has shown that cell in process of rapid division lymphoid tissue and the endothelium of the blood vessels are especially vulnerable to radium. In inoperable cases inefficient treatment is worse than useless it is dangerous as small doses stimulate cell growth. The treatment must be pushed in massive doses to the limit and in some instances beyond the limit of skin endurance. An important guide is the amount of constitutional disturbances following intensive therapy. At times there is temperature of 102 to 103 for weeks following intensive treatment.

In late X ray reaction the skin becomes very tough assumes the appearance of wish leather and finally sloughs. It occurs in an area having a more than usually heavy bombardment of the rays. It occurs some weeks or months after the patient has ceased treatment is very painful and takes a long time to heal.

The author has noticed ræmurs develop in about half a dozen inoperable cases where intensive therapy had been given for a number of years. The primary growth remained quiescent there was no evidence of secondary deposits and no toxæmia resulting from the cancerous blood. It is known that X rays have a profound effect on the blood.

The X rays are of undoubted therapeutic value in inoperable growths. Life is frequently prolonged for years pain is relieved or alleviated secondary glands can be controlled and prevented from ulcerating ulcerated surfaces heal up and foul discharge ceases. The primary growth often shrivels and at time become operable. V. C. HUNT

Tuffier T. Treatment of Purulent Pleural Effusions (Traitement des épanchements purulents de la plèvre) *Presse méd.* 1ar 19 8 1911 497

Tuffier and DePage some time ago published a preliminary account of their method of treating purulent pleurisy already open by chemical disinfection of the cavity followed by closure of the surgical incision of the costopleural wall. Tuffier now reports the findings in 4 cases 7 of which were medical.

The treatment of closed pleural suppurations consists of three stages pleurotomy chemical disinfection and closure. The pleurotomy varies according as the pleurisy is pneumococcal or not. In the first case a simple pleurotomy is done in the intercostal space making the incision very low for drainage. In the second case thoracotomy with resection of one rib is preferred. This allows thorough evacuation and exploration of the cavity and of the lung.

The chemical disinfection is carried out by Carrel tubes and Dakin's fluid controlled by bacteriologic examinations. This lasts for a time varying from five to thirty days until the pleural cavity is seen to be sterile.

In the case of fistulized purulent pleuritis after a thorough bacteriologic examination of the pus etc. the procedure consists of stripping up the tract after a previous radiologic examination to know its exact conditions. The tract is widely opened so as to give plenty of light and space. Rubber tubes stiffened with silver wire are introduced into the cavities so as to reach all recesses. This is done under radioscopic control. Pleural adhesions are removed as far as possible and Carrel tubes placed. During disinfection pulmonary gymnastics are regularly and methodically employed and the expansion of the lung is noted daily.

After removal of the Carrel tubes a dry compress is applied to the wound for forty eight hours. If the secretions are negative as regards infection suture is then done. The fistulous tract is first resected and false membranes which form a veritable shell about the lung are attacked with the bistoury and the lung decorticated. When a complete decortication is not possible the membrane must be removed where it can be separated from the lung without damage.

Sometimes close adhesions must be separated. After decortication suture is proceeded with. This latter must not be complete if any appreciable quantity of blood oozes. Tuffier thinks that since the membrane is often infected it might be better to remove it before completing the chemical disinfection.

The only postoperative complications observed are an occasional new septic effusion not usually extensive which calls for opening and sterilization and a re-opening of the superficial part of the cicatrix. The only inconvenience about this is delayed recovery.

This surgical procedure is the inverse of the older method in which more attention was given to the thoracic wall than to the lung. Here it is the lung and not the wall which claims attention.

All 47 cases operated upon have recovered without any chronic complication. In 11 cases the wound had to be re-opened owing to the formation of new suppurative collections in a few other cases because of fistula etc. In 9 cases there was a slight thoracic deformity and in 1 an important one.

Illustrations of the technique are given.

W. A. BRENNAN

Péhu and Daguet Clinical and Radioscopic Re-
searches on Certain Late Sequelæ of Pleuro-
pulmonary War Wounds (Rech he h q s
 et do op q es su rta n s équelles l i ta s
 d s pl es pl ro-p lmo res de g err) *Ly*
cl g 19 8 xv 91

By the late sequelæ of pleuropulmonary war wounds the authors mean to indicate certain results found several months after the traumatism when all osseous bronchopulmonary or pleural manifestations either inflammatory or suppurative have terminated the cicatrix; not however immediately fixed as regards its form.

The authors have observed 146 cases of pleurisy in soldiers varying from twenty to forty years old these men had received a projectile from four months to three years before a penetrating wound in the thorax due to a projectile from the immediate effects of which they had recovered before coming to the authors.

Of the 146 on clinical and radioscopic examination one third were found to have retained no trace whatever of the wound. One third showed attenuated symptoms of chronic pleuritis with adhesions limited generally to the lower third. Such symptoms are not so well observed from the physical examination as from the radioscopic. The latter is the more essential in judging the condition of the thorax.

The sequelæ just referred to are observed after cases of extensive hæmothorax which have necessitated numerous punctures likewise after cases of pyothorax with prolonged suppuration or in cases in which a long interval of time has elapsed since the wound. Nevertheless even if the hæmatic or purulent collection has been abundant and of long duration it is surprising that the fatality of the case is not restored to effect.

From the point of view of the disappearance of these residual manifestations there is a distinct difference between the bloody effusions and the traumatic or spontaneous (pneumoni) empyemas on the one hand and the serofibrinous pleurisy of unquestionably tuberculous nature on the other. The first type leaves but few sequelæ from the second type diaphragmatic or pleural cicatrices arise the resorption of which is almost always slow.

The authors call special attention to the proportion of pleuropulmonary tuberculosis observed in case of the various wounds. Some have expressed the opinion that the traumatic does not play any part in the development of tuberculosis or at most only a problematic part. Such a tuberculosis ought to appear for the first time in the early weeks following the injury and it is only under such conditions that the traumatism can with certainty be accused of reawakening a dormant and well tolerated condition.

Of the 146 soldiers examined 3 cases were observed of demonstrated pulmonary tuberculosis and 2 cases of serofibrinous pleurisy of an undoubtedly tuberculous nature. But such cases are reported with the greatest reserve so far as their dependence on the prior injury concerned. W. A. BRENN.

Inglo Surgical Sequelæ of the Grippe (Se ul s
 quiru g cas d la gripe) *S glo méd M dnd 9 8*
lx 8 9

The author says that the only complication of grippe which passes into the domain of surgery is pleural effusion. When there is any suspicion after a systematic examination that a patient with grippe has a pleural effusion an exploratory puncture should be at once made. When properly done there is not the least danger and it will end all doubt.

According to laboratory researches made at the instigation of the author the germ responsible for the pleural effusion is a special streptococcus differing from Pfeiffer's and the commoner forms. This is found in the exudate in enormous quantities accompanied by leucocyte and pus.

The findings have induced the author to intervene surgically without loss of time and before the effusion assumes the macroscopic characteristics of pus. As the patients recover much more readily when in this state the author's procedure, based on the logical assumption that every infected focus in a closed cavity should be drained when once it is diagnosed.

The author performs a costal pleurotomy. In all cases in which he performed this operation the results were most excellent. Fever falls the lung expands and there are no adhesions. In no case as the pleural fistula as a sequel.

The author says that the opposition to surgical treatment of the pleural complications of grippe does not come from the patients but from their medical advisers who persist in long continued treatment by the older method instead of an operation which does not last more than fifteen minutes and may be done under local anesthesia. The results of which are most secure.

The author generally resects the tenth rib with the ninth or eleventh preferring a costal to an intercostal pleurotomy. If a thoracic does not develop the pleura is incised with the bistury the patient put in dorsal decubitus the wound enlarged with the finger and the cavity completely drained. After which a permanent rubber drain is placed. W. A. BRENN.

L. Fort R. A. Wid and Economic R. ute of Ap-
proach to the Cervicomedastinal Space (U
 o éo m q t l g pul d i t
 e o m é d t l) *P s d Pr 918*

373

Le Fort in previous reports on endothoracic surgery recommended methods fulfilling the essentials (a) to give all the light necessary by opening a large breach which could if necessary be enlarged (b) on termination of the operation to assure the integral repair of the thoracic wall by the avoidance of all unnecessary mutilation.

The cervicomedastinal space difficult to approach owing to the presence of the clavicle and of the first rib. A sternocleidocostal flap outside of a

temporary incision of the sternum which being a spongy bone rapidly re-consolidates does not injure any important bone nerve or muscle and respects the clavicle as well as the sternocostoclavicular and the sternomastoid articulations.

Such a flap opens up a large breach giving an easy access to the organs at the base of the neck and to all the upper mediastinum to the first thoracic vertebra and to the summit of the lung. During operation this breach may be enlarged above below or beyond the median line. Injury of the important vessels is easily avoided. Integral repair of the wall is assured after operation.

Le Fort describes and illustrates each step of his technique for cutting this sternocleidocostal flap the procedures indicated and the closure. The chief steps may be summarized as follows.

The sternocleidocostal incision is 10 to 12 cm long and descends over the sternum as far as the first intercostal space. A horizontal incision of 12 to 14 cm is then made starting from the lower extremity of the first incision crossing the anterior face of the manubrium and following the first intercostal space as far as the deltoid section of the soft parts as far as the bone. Dissection of muscles from the posterior face of the sternum and from the sternocleidoclavicular region. Median vertical section with the chisel of the suprasternal space sacrificing the anterior jugular vessels median or paramedian section of the upper part of the manubrium freeing the internal extremity of the first intercostal space on its two faces and freeing the sternal border between the two first costal cartilages. The bone flap can be raised by easy manipulation and without disturbance of any important vessel.

The indications for this technique should not according to Le Fort be limited to war surgery to the extraction of projectiles or to the treatment of vascular injury. The method is applicable to the treatment of tumors foreign bodies oesophageal or tracheal strictures adherent plunging goiters thymic tumors aneurisms etc. Facility in reaching the mediastinal space will also extend the indications of practical surgery in a region which most surgeons approach with hesitation.

W. A. BRENNAN

TRACHEA AND LUNGS

Freudenthal W. Recurrent Teratomatous Growth of the Trachea. *A. I. M. J.* 1918 CIV 1158

The patient aged twenty seven years had been tracheotomized on account of diphtheria when he was fourteen years of age. Following operation he was well until five years later when he was examined by the author for dyspnoea especially on exertion. His voice was clear. Examination disclosed a web like grayish looking mass about 1 inch below the glottis involving the greater part of the trachea with only a small opening anteriorly. This was apparently due to the former tracheotomy. The nose and throat were negative.

Under suspension laryngoscopy the mass changed to a reddish color of some dimension. Under a general anæsthetic the patient became so cyanotic that a hurried tracheotomy had to be performed. All of the visible growth was then removed and everything thoroughly cauterized. The wound soon healed and the patient was discharged breathing normally.

He returned a year later and all the visible growth was removed under general anæsthetic. Nine months later he returned again for treatment. Under rectal anaesthesia effort was made to extirpate all of the intratracheal mass but profuse hemorrhage forced cessation of the attempt before much of the mass was removed. A few days later again under rectal anaesthesia the trachea was opened and great masses of granulation tissue were found and removed with very little hemorrhage. The pathologist reporting the growth to be an endothelioma. Radium was applied with very good effect. He was again discharged.

In February 1915 a new mass was found springing from the lateral wall of the trachea and another mass anteriorly. Under intratracheal anaesthesia he was again operated upon and the tumor again removed. No trouble recurring for several years.

In 1918 tracheal examination showed about one inch below the glottis on the left side a whitish mass reaching almost to the center of the tracheal lumen resembling a vocal cord. On the right side was a smaller congested and also immobile one. Being unable to stretch the stenosis by long intubation tubes and bougies operation was again done. The patient died of hemorrhage soon after. The pathologist reported that the fragments did not resemble the organs from which they were removed. Microscopical section presenting several interesting features which led to the diagnosis of a teratomatous growth. The microscopic diagnosis was myxochondrocylin-droma.

The author concluded that the white mass seen intratracheally consisted of neoplastic and scar tissue. He was able to find only 2 cases in the literature resembling this one. The great value of the direct method in operative work in the lower air tract has been demonstrated. Nevertheless in the case here cited very little was accomplished under local anaesthesia and even under a general anaesthesia the attempt to extirpate the neoplasm had to be given up on account of severe bleeding.

It seems plausible that in connection with other means the galvanocautery if applied carefully under a local anaesthetic by means of Lynch's galvanocautery point should be of value in non malignant cases.

H. H. FREILICH

Marion G. The Extraction of Intrapulmonary Projectiles (A propos de extraction des projectiles intrapulmonaires). *Bull. et mém. Soc. de ch. de Par.* 1918 CIV 1439

Marion gives statistics of his method of removing intrapulmonary projectiles to which he has ad-

hered in spite of criticism by pro or fixation of the lung to pleura. He believes his method is not so deserving of criticism since the actual results are good.

In detail Marion's method may be summed up as follows: finding the location of the projectile by means of a compass; resection of a rib; fixation of the lung to the pleura by three or four sutures of catgut; incision of the pleural wall between these sutures though which the finger seeks the projectile.

Marion operated upon 58 cases, which included almost every type in the class of surgery, including several cases of projectiles situated in the hilum region. In 56 cases he succeeded in finding and extracting the projectile. In only seven of these was he obliged to resort to a two-stage operation because of difficulty in finding the projectile. There were deaths only one of which could be imputed to the operation.

Marion thinks that methods which are claimed to be better than his cannot show such results. Petit and Villain's control method is attractive and Marion would adopt it especially in the case of cortical projectiles if he had the least trouble with his own method. Marion was forced to use Duval's method in 11 cases in which he could not fit the lung to the pleura. These patients showed more shock and fatigue than in the case of his own method and the heads subsequent purulent pleuritis. Twelve out of the total 156 extractions developed this complication but all were cured. He has not tried L. Fort's method for extraction of projectiles from the hilum region. He has always been able to extract them by his own method.

Marion thinks that while his procedure has not so much brilliancy as the method of Duval and L. Fort it is sure and harmless. W. A. B. NEW

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Burke J. Surgical Aspects of Right Subphrenic Abscess. 1. S. G. Phil. 9. 8. 14. 383.

A subphrenic abscess may be defined as a circumscribed collection of pus beneath the diaphragm and in contact with some portion of it. The falx of the ligament plays a decided part in limiting the extent of such abscesses and clinically modifies them. The history of it. They are due to infection of the liver, gall bladder, and ducts, duodenum, and appendix. Of the 18 cases observed, 11 were ordered by the author, followed upon the perforation of the appendix and occurred as a part of a general peritonitis or an extension up the lesser peritoneal fold from the pelvis, as a pyelo-phlebitis, a lymphatic extension through the greater peritoneal sac or through the lymphatics around the duodenum, stomach, and the ileocolic lymphatics.

Little has been added to the knowledge of the diagnosis. Von Leyden's of the monograph published in 1890 is still a useful lack of details in the description of the physical signs. The author has noted in the analysis of his cases an irregular line of the upper border of liver illness, the highest point being in the midaxillary line in front of it not greenish with the inferior paralytic dullness of the empty man. Respiratory mobility is all but lost. In the case of no pleural effusion as present. Although Von Leyden laid stress on the presence of cough and expectoration in subphrenic abscesses there was a slight short painful irritation of cough in most of the author's cases. As the case progresses there is a slight increase in the right lower chest tenderness and the left side of the chest moves more than the right. If gas be present and most authorities state that it is usually present although the author did not find it in a single one

of his cases there is pulmonary resonance, not tympany, and then liver dullness. In some cases the fever heads early in the disease, peritonitis follows. Complication of the right base is often found and the author found it in 10 cases that the heat was placed. In some instances the liver aspirated in the right. In about half of the cases the onset is sudden, while in the other half it is insidious. In most of the latter there is little or no pain. Vomiting very frequently occurs as a symptom and hiccuping occurs rarely. Localized swelling of the abdomen is usually a late sign. The extension of the pleura in 33 percent of the cases. This must be borne in mind in making exploratory punctures. The author uses a needle through the chest wall with a good caliber so that deep collections may be reached and that hemorrhage will not prevent the aspiration of pus.

The treatment of a subphrenic abscess is always surgical although a certain number will cover without intervention. The majority are encapsulated and absorptive by uptake into the bronchus. An abscess has already been known to rupture into the alimentary tract and find its way out through the umbilicus. The mortality has been variously placed between 35 and 50 percent. This may be explained upon the basis of late diagnosis and poor judgment in the route of attack. The author prefers the abdominal route in most cases, a combination of where necessary with the transpleural method. He believes that in this manner multiple localized abscesses will not be overlooked. C. 00.

T. J. Pujol. Some Dispositions of the Gastrocolic Ligament. (S. B. L. G. N. D. P. D. L. G. M. T. G. T. L. I. F. H. P. I. D. F. D. L. P. D. G. S. F. M. D. D. 9. 8. 399.)

That position of the great or gastrocolic omentum comprised between the greater curvature of the

stomach and the transverse colon called the gastrotocolic ligament presents many variations which are important in connection with surgical operations in this region. These variations consist first in the dimensions of the ligament and secondly in its relation to the mesocolon.

The author's researches have been made in a large number of cadavers. In 17 out of 30 cadavers the mesocolon was found fused in part with the gastrotocolic ligament or in about 56 per cent of the cases. When the mesocolon is very large and is not fused with the ligament there is a cavity between the two (gastrotocolic diverticulum) which should not be confused with the embryonic and normal cavity existing between the two layers of gastrotocolic omentum.

This gastrotocolic diverticulum sometimes communicates with it by an orifice formed by the partial fusion of the ligament and mesocolon. The diverticulum may be simple, multiple, or ramifying.

The rather frequent abnormal forms of the transverse colon favors coalescence of the two organs referred to.

The surgeon in operating should always bear in mind the variety of relations herein referred to.

W. A. BRENNAN

Downes W. A. Congenital Hernia of the Diaphragm. *Surg. Gynec. & Obst.* 1918 XLVII 393

Congenital hernia of the diaphragm occurs much more frequently than is generally supposed. X-ray offers the best means for diagnosis. Many cases are discovered accidentally in the routine examination of patients. The symptoms may be those of pyloric stenosis or intestinal obstruction. Hernial protrusion is usually through a defect in the left side of the diaphragm rarely through a normal opening. In the majority of cases there is no hernial sac. The case herewith reported occurred through the esophageal opening.

The patient was a child seven years of age in whom symptoms of vomiting had recurred since the age of twenty months. There were short periods of freedom from symptoms up to within the last year and a half since which time the vomiting had been almost continuous. Weight was 27 pounds. X-ray examination showed the stomach to be above the diaphragm. At operation the esophageal opening was found dilated to two inches in its transverse diameter and the entire stomach with about three inches of the duodenum was in the thoracic cavity.

On account of adhesions at the pyloric end of the stomach it was not possible to reduce the stomach and duodenum into the abdomen. As it was necessary to overcome the symptoms of obstruction the greater curvature of the stomach was drawn through the esophageal opening and an anterior gastroenterostomy performed. The stomach was anchored to the esophageal opening by silk sutures. The patient was discharged symptomatically cured. The gain in weight was ten pounds in four months.

Greenwood H. H. Ventral Hernia: a Device to Strengthen the Abdominal Wall. *Bull. M. J.* 1918 II 31

Repair of the majority of cases of large ventral hernia can be adequately effected by one of the established methods but occasionally one is encountered in which the ordinary methods are inadequate.

These cases are usually the sequel of sepsis. Such was the sequence in the case to be described. Hysterectomy for impacted fibroid of the uterus was performed in February, 1913, by the abdominal route. This was followed by sepsis of the wound and discharge of urine through a fistulous tract which finally closed but allowed the development of a huge ventral hernia in the middle line extending from above the umbilicus to the pubes.

On July 26, 1918, a transverse incision curving downward was made midway between the umbilicus and pubes extending from the outer border of each rectus. A crescentic piece of skin was excised and the flap dissected up and down. A longitudinal incision through the anterior layer of fascia of each rectus was made close to and parallel to the outer border of the muscle. The flaps dissected off the muscles and turned inward. The muscles were freed also on their posterior aspect nearly to their outer margin and then by pulling on the flaps it was found possible to draw them inward almost to the median line.

On one side it was necessary to peel outward the diaphragmatic layer of combined transversalis fascia and peritoneum from the posterior layer of the rectus sheath and in the angle the free edge of the flap was fixed by a series of interrupted sutures of catgut. The opposite flap was similarly treated the two forming a firm bed on which a McGavin filigree was placed. The rest of the operation was completed on familiar lines. The patient made an uneventful recovery.

V. C. HUNT

GASTRO INTESTINAL TRACT

Dubard. Gastroduodenal Ulcer and Chronic Appendicitis (Ulcer gastro duodenal et appendicite chronique). *Lyon chirurg.* 1918 XV 356

The author calls attention to the frequent co-existence of appendicitis with gastric and duodenal ulcers. In 36 laparotomies for ulcers and pyloric stenosis the appendix was found diseased in 12 cases (33 per cent). 18 out of 40 cases operated upon for juxta-pyloric or duodenal ulcers showed chronic appendicitis (45 per cent). The author also observed that about 80 per cent of his gastric ulcer patients were seized with pulmonary tuberculosis generally benign and of slow evolution.

Almost every patient presented what the author calls the pneumogastric sign, i. e. pain on pressure at the level of the cervical pneumogastric. He infers that this is a neuritis of the vagi nerves of pulmonary origin originating from the gastro-intestinal distribution of these nerves which causes

trophic disturbances and thence ulcers and other chronic inflammatory injuries of the intestinal tract.

The frequency of multiple lesions of the digestive tract partly explains postoperative functional failures from isolated intervention such as appendicitis and gastroenterostomy. As a or lary as complete an examination as possible of the whole tract as far as it is incumbent on the surgeon.

W A BRENAN

Bonoino Udondo C. The End Results of Gastroenterostomy in Non-Complicated Stomach Ulcer (Reitdo) J J d s d l g t n t m n l l a m p l d e s d e l e s t m j) R e v A c c e d g t B o A i 9 8 5

The author has followed the history of 2 gastroenterostomy cases for periods varying from fourteen months to four years. In all cases but one the operation was posterior. The situation of the ulcerous process as in 10 cases on the small curvature in 3 cases on the pylorus and pyloric antrum on the anterior face 1 and on the posterior face 2 cases. Of the 6 cases located on the small curvature 6 were in the vicinity of the antum 2 in the cardiac zone and 2 median.

Judging from the absence of all important symptoms and from the functional and radioscopic findings 6 of these operated patients may be considered cured. The remaining case 72.64 per cent show subjective symptoms analogous to those shown before operation. The time of appearance of those symptoms has varied from three months to two years, the average 5 from six to ten months.

In 2 cases there has been free hæmatemesis and the stools have shown occult hæmorrhage in 13 other. The total acidity has been reduced in 43.68 per cent increased in 18.7 per cent and not modified in 24.96 per cent of the case. Free hydrochloric acid has diminished in 43.68 per cent increased in 18.72 per cent and not modified in 12.48 per cent of the cases. These results are in general accordance with those recently published by Wlensky and Crohn although Snithies of the Mayo Clinic reported reduction of the acidity in 8 per cent and increase in only 20 per cent of gastroenterostomy cases.

Radioscopy of 13 of these patients has shown that there was a bismuth retention after six hours in 4 cases. Evacuation as observed to be by both the new opening and by the pylorus with predominance of the first. In only one case the pylorus did not function. Generally an evident diminution of the peristaltic contraction has been observed.

Thus in 22 cases of gastroenterostomy for ulcer in 7.04 per cent there has been observed after a varying lapse of time manifestations identical with those which preceded the operation. These are not symptoms of the dyspepsia common to this class of patients but are symptom of active ulceration.

The study of the results has absolutely modified the author's ideas of the therapeutical value of the operation which he formerly held. He does not

believe that failure to obtain the desired result is due to faulty technique. He concludes that in a high percentage of non-complicated gastric ulcers simple gastroenterostomy does not modify the end results of the process. He will show in a later article that simple medical treatment gives an equal number of recurrences and improvements without exposing the patient to the danger of operation. He is therefore opposed to surgical treatment and urges safer procedure.

W A BRENAN

Leatt E J A Brif R w of th Roentgenology of the Stomach Log l l a d U J 9 8 1 3 7

The author first gives a brief review of the early studies of the stomach by means of the barium meal and dwell at some length on the necessity of the roentgenologist's thorough familiarity with the principles of internal medicine in order that his X-ray findings may be properly interpreted. It is essential that he have full knowledge of (1) the anatomy and physiology of the organ, he is required to diagnose (2) the appearance of the shadows of such organs on the fluoroscopic screen, (3) the pathogenesis and morbid anatomy to which such organs are subject, (4) the relation of the changes in the shadows of the normal organ bear to such pathological processes upon which to finally (5) base a diagnosis in such findings in a more complete manner than can be accomplished by any other method.

The normal type of stomach is classified under four headings: (1) the ribotic type characterized by equal width of the sac and descending limb, (2) the hypertonic type characterized by the pars dicensider than the sac assuming the form of a steplike and normally situated more or less diagonally across and high in the abdomen, (3) the subtonic type characterized by the descending limb narrower than the sac and normally situated low down in a short abdomen, (4) the hypotonic type characterized by a deep sac and a long narrow drawn out pars descendens. Each of the types will be found to correspond quite definitely with the habitus of the patient.

If the type of stomach does not correspond to its habitus then it may be regarded as abnormal and an indication for a thorough search along the following lines.

The hypertonic stomach frequently appears on of effluviations is often associated with duodenal ulcer pyloric adhesions pancreatic hepatic or cæcal irritation.

The subtonic stomach occurs as a mechanical etiology as a gastric pylorospasm due to loss of intra-abdominal pressure as an intestinal ptosis pendulous abdomen etc.

The hypotonic stomach occurs to ectopic or ptotic distention of the stomach by weakness of the muscle fibers. It is differentiated roentgenologically from the subtonic stomach by a drawn out pear-shaped ir dome.

The atonic stomach is always associated with dilatation and is characterized by a crescentic shadow situated in the median line

Changes in position of the stomach are most commonly due to pyloric adhesions associated with pericholecystitis or perforating duodenal ulcer but also may be due to echynococcus cyst hydronephrosis ovarian cyst large pancreatic tumor etc which can often be surmised from the direction in which the stomach is being pushed. An enlargement of the liver or spleen can be seen directly upon the plate

Changes in the luminal contour may be due to spastic or organic changes. The spasm may present itself in the form of an incisura on the greater curvature which may be deep enough to almost bisect the stomach pylorospasm without distortion recognized only by retention of the opaque meal and accompanying compensatory peristalsis diffuse distortion of the pyloric end of the stomach and spasm of the longitudinal fibers of the lesser curvature causing an indrawing of the pylorus. Total gastrospasm may be recognized by the lack of peristalsis indicating rigidity of the walls and pyloric patency. Organic changes manifest themselves by a constant persistent defect in the contour of the barium filled stomach

Peristalsis becomes pathological when it is retarded accelerated erratic absent or reversed. Peristalsis is usually absent in extensive carcinoma syphilis etc and is accelerated by hyperacidity and by pyloric obstruction. Reversed peristalsis is of grave omen

If the ordinary barium meal is retained in the stomach longer than six hours the motility is regarded as pathological. This may be due to various causes such as organic obstruction hyperacidity pylorospasm etc

The roentgenological estimation of gastric secretion is subject to many fallacies nevertheless it can be roughly estimated first by the width of the air dome in the empty stomach or more accurately by the use of the sinking and floating barium filled capsule

The author also draws attention to the fact that many other abdominal disorders may refer symptoms to the stomach and he urges the importance of a study of the complete gastro-intestinal tract in all cases especially in those which present negative stomach findings

He summarizes as follows

1. A roentgenological diagnostician must be a physician thoroughly acquainted with the subject on hand from the standpoint of a physician and of a roentgenologist

2. Roentgenological diagnosis is not a perfect method of diagnosis because it is still subject to fallacies

3. Roentgenology directly discloses the following conditions of the stomach: quantity of secretion gastric motility mechanical ectasia atonic ectasia atony and dilatation pangastric adhesions dis-

orders due to extragastric causes state of tonicity nature of peristalsis extrinsic and intrinsic spasm pyloric obstruction due to direct and indirect causes penetrating ulcer Ford ulcer carcinoma syphilis fibromatosis and benign tumors

A number of tracings from the original slides with descriptions conclude the article W A EVANS

Le Noir P. Transient and Alimentary Glycosuria After Gastro Enterostomy for Pyloric Stricture of Ulcerous Origin (Glycosurie transitoire et épreuve de la glycosurie alimentaire chez les opérés de gastro enterostomie pour sténose pylorique d'origine ulcéreuse) *Bull et mém Soc méd d hôp* Par 1918 xlii, 07

Following the operation of gastro enterostomy the functioning of the stomach and intestine is sometimes sensibly modified and no longer corresponds to normal physiological conditions. The intestinal secretions may penetrate into the stomach and although the presence of bile in the gastric cavity may not cause inconvenience and may even be advantageous this cannot be said for the pancreatic juice in contact with the gastric secretions.

The author has made systematic examination of the urine in patients after gastro enterostomy. In some cases he has found sugar in the urine. The quantity was small and the glycosuria was observed to be inconstant and transitory and was only manifested during the digestive period

He cannot make any definite statement as to the conditions which cause or favor this glycosuria. It might be an alimentary spontaneous or provoked glycosuria. Such a hypothesis would however be only admissible for a few of the patients observed because in the majority the suspicion of alcohol or hepatic insufficiency may be removed

The appearance of sugar in the urine would not be inconsistent with disturbances in the duodenal pancreatic functioning. The clinical facts reported by Zack and the experimental results found by Gaultier and others have shown that glycosuria can result from lesions of the duodenal mucosa. A very complete study of the duodenal chemistry made by Gaultier in one of the cases on which the author reports has given reasons for the belief that in the gastro enterostomy cases there may be an alimentary glycosuria due to pancreatic duodenal insufficiency. Whatever is the cause the existence of this spontaneous or provoked glycosuria merits attention and future researches may throw more light upon it

W A BRENNAN

Hemmeter J C. The Modern Treatment of Gall Stone Disease as Affected and Controlled by Duodenal Intubation *Med Rec* 1918 xciv 575

The bacterium which is the cause of the gall bladder infection cannot always be isolated from the bile although it may be from the wall of the bladder and the center of the stone. It is not necessary to undertake puncture of the gall bladder through the intact abdominal wall in order to endeavor to as-

certain the specific micro organism. This can be done by duodenal intubation often gentle massage of the gall bladder though the abdominal walls by setting up of the bile evacuating mechanism by injecting HCl and albumoses into the duodenum. In case there is an obstruction of the cystic or the common gall duct this procedure cannot prove successful. But if any bile reaches the duodenum at all it can be aspirated by the method of duodenal intubation first practiced by the author in 1897.

The course to pursue in aiming at a treatment of cholelithiasis that is based upon the cause would be first to ascertain the specific bacterium which is causing the infection and thereafter to obtain a serum by inoculating animals with this special strain of organisms. The principle of non surgical treatment of cholelithiasis is to bring about a period of quiescent latency in the disease. The employment of so called cholagogues especially a number that appear to be proprietary articles is condemned. The use of olive oil either by mouth or rectum in large doses has not been followed by gratifying results. It is entirely irrational to speak of a solution of gall stones by medical means.

E B IRELAND

Manson J S. Adenoma of the Small Intestine in an Infant with Resulting Intussusception. B. J. M. J. 9 8 43

An eight months infant was seen with a history of vomiting on the previous day. Cathartics and enemata brought no result. A week later fecal discharge contained a small quantity of dark coagulated blood and some inspissated mucus. A fairly firm mass was felt in the right lumbar and umbilical regions.

The abdomen was opened by a median incision above the umbilicus and an empty plum colored loop of bowel twisted on itself and covered with adherent lymph presented. The twist was undone and a small tumor was felt in the bowel which was not removed because of the child's condition.

The child died during the night and the post mortem revealed an adenomatous polypoid growth in the intestinal wall with hypertrophy of the bowel wall for about a foot next the tumor with a narrowing of the lumen.

P W SEXTON

Romanis W H C. The Surgical Treatment of Intussusception. Practitioner. L. d. 9 8 c 5

For some years it has been universally admitted that the treatment of intussusception should be entirely operative and that laparotomy should be done at the earliest possible moment. The results of the different operation performed in the series of 374 cases refered to by the author bear out the well known fact that if anything more than the simple procedure of opening the abdomen and reducing the invagination is required the mortality rate in irreducible or gangrenous intussusceptions are fortu-

nately comparatively rare only 40 cases of the above series failing to be reduced.

In the case of a reducible intussusception surgical procedure varies somewhat. Most surgeons are content to open the abdomen, reduce the invagination and close the abdomen as quickly as possible. Other operators undertake some further procedure calculated to prevent the recurrence of the condition. True recurrence of an intussusception does not appear to be sufficiently common to justify any additional preventive procedures which at all increase the risk of the operation or prolong its duration.

In the case of irreducible and gangrenous intussusception resection on children of five years or over has a not unduly high mortality and should therefore be undertaken in a child of this age and be followed if the condition of the patient permits it by union of the bowel end. If however an irreducible intussusception occurs in a younger child of one or two years of age the outlook is altogether different for recovery after resection is practically unknown in a child of this age. A fair number of instances of recovery after sloughing of an intussusception is known and when encountering an irreducible invagination on laparotomy in a child under two years old slender though its chance of unaided recovery by sloughing is it is probably greater than the infinitesimally small chance that a resection will save its life. A third alternative in an irreducible case is the performance of a lateral anastomosis above and below the lesion but this is seldom done.

These great matters should be kept continually in mind in considering the operative technique.

The duration of the operation and especially the time during which the peritoneal cavity is kept open must be cut down in every possible way that is consistent with careful and accurate work and delicate manipulation.

2. The duration of general anesthesia if employed should also be diminished as far as possible if available spinal anesthesia should be employed in its stead.

3. Every possible means must be taken to combat shock before during and after the operation.

E B FRIEDICH

Cannady J E. Long Resections of the Small Bowel. The Surg. St. Aug. 1917

Dember

The length of the small bowel varies greatly with the individual also in accordance with the character of the food supply. It varies from fifteen feet and six inches to thirty feet and ten inches usually being slightly longer in the female. Races dependent largely on a coarse vegetable food supply have longer intestines than those who subsist on a more concentrated diet. Extensive clinical laboratory experiments made under the direction of Senn and Kukulski show that at least one half of the small bowel can be removed and the individual survive and maintain a fair degree of bodily health.

and strength. After such operations the wastage of fats and albumins is exceedingly large and the diet has to be very liberal in that character of food.

In the case reported ten feet of the small bowel together with the cæcum and six inches of the ascending colon were resected. A lateral anastomosis of the ileum with the transverse colon was made. This extensive resection was done for the relief of multiple tubercular strictures of the small bowel. Following this operation acute obstruction developed. The abdomen was re-opened for the correction of this. An adherent kink of bowel was liberated but symptoms of obstruction reappeared twenty four hours later. Then an enterostomy was done with the complete relief of the obstructive symptoms and subsequent operative recovery. Several weeks later the patient died from an acute pulmonary tuberculosis. A postmortem was done and it was found that the original length of the bowel was abnormally short. Measurements of the remaining amount of bowel showed only four feet and nine inches of the large bowel and five feet seven inches of the small bowel measuring from the anastomosis up to the duodenojejunal junction.

Bunch G H The Diagnosis of Appendicitis Complicating Pregnancy *J So Car M Ass* 1918 xiv 250

Dull pain followed by nausea, right sided rigidity with tenderness about McBurney's point, fever with leucocytosis mark acute appendicitis in the pregnant woman as in any other patient. They are often not given their proper significance in the parturient because the profession is prone to attribute the patient's complaints and symptoms to the pregnancy and without investigation to apathetically wait for nature at delivery to relieve her of her troubles.

Expectant treatment without thorough examination and accurate diagnosis has no place in pregnancy. As the intestines are pushed upward and to the sides by the enlarging womb the appendix lies nearer the right kidney and pyelitis may so closely simulate acute appendicitis that without microscopic examination of the urine differentiation may be impossible. The urine in pyelitis is loaded with pus and no matter how urgent the symptoms no pregnant woman should be operated upon without a microscopic examination of a catheterized specimen. Voided specimens are contaminated and worthless.

In biliary colic there is tenderness over the gall bladder. Colic from ureteral stone is intense. Blood is usually found in the urine. Pus may be found. *The X ray of help in the diagnosis.* The differentiation between acute appendicitis complicating early pregnancy and extra uterine pregnancy is not important for both are abdominal emergencies capable of being treated through the same incision. In tubal rupture the shock is so great that the patient may fall of faint. There are the signs of internal hemorrhage, fever and leucocytosis come later. In pregnancy early diagnosis and early operation are imperative. Owing to the lowered resistance of the patient and

to the pressure of the womb on the appendix causing disturbance of its blood supply the appendix is more apt to become infected and rupture in pregnancy. After perforation localization is difficult and diffuse peritonitis often results because the intestines and omentum are more movable than the cæcum and are lifted from it by the womb so that they are not available in walling off the infection. Operation by a high McBurney muscle split incision is neither difficult nor dangerous in clean cases. With care and gentleness at operation few cases miscarry.

The author has operated upon and removed the ruptured appendix in three cases complicating pregnancy. They were young primiparæ between the fourth and fifth months of gestation. Case 1 had diffuse peritonitis and died of sepsis on the sixth day. Case 2 had a large abscess to the right of the navel. Convalescence was trying. Nausea was persistent. Septic fever lasted for weeks. Emptying the womb was urged but refused by the patient. At term she gave birth to an eleven pound boy who is living and well. Since delivery the discharge has stopped but there remains a postoperative hernia. Case 3 was an unmarried girl with a venereal history. She had diffuse peritonitis and miscarried on the fourth day. After twelve weeks in bed she is well. During convalescence she had a pelvic abscess necessitating median laparotomy. She had phlebitis in the femoral and popliteal veins on the left and then on the right side. She had pyelitis on the right side and then on the left.

Bower J O Appendicitis in Children *N Y J* 1918 cxiii 501

Two years ago on reviewing the case records of patients operated upon for appendicitis under fifteen years of age at the Samaritan Hospital Philadelphia it was found that the percentage of clean cases (those in which it was not necessary to insert a drain) was less than ten per cent. At least ninety per cent had peritonitis either local or general and the mortality was four times greater than the mortality in a corresponding number of cases among adult patients. In a similar number of operations on adults the mortality was less than five tenths per cent. These facts show the importance of early diagnosis.

Immediate operation is generally accepted as being indicated in practically all types of appendiceal inflammation the exceptions being (1) early perforations with widespread peritonitis due to the streptococcus (2) cases of general peritonitis of several days duration where an operation might turn the tide against a favorable outcome. In these cases many institute the Ochsner treatment with excellent results it is not easily carried out in children.

At the Samaritan Hospital however these cases do better if drainage is instituted. This may be accomplished with a minimum amount of shock to the patient by using either local or intraspinal anesthesia. The advantages gained by the use of the

latter are (1) the patient's emunctories are not interfered with as they unquestionably could be if the were administered (2) relaxation of the abdominal muscles permits the insertion of a drain with the least possible amount of manipulation of the abdominal contents (3) paralysis of the bowel and sphincter permits evacuation of the contents of the lower bowel E. W. A. L. CO. NELL

LIVER PANCREAS AND SPLEEN

Mann F. C. and Foster J. P. The Secretory Pressure of the Liver with Special Reference to the Presence or Absence of a Gall Bladder *A. J. Physiol.* 1908, 1, 78

The following work by Judd and Mann has demonstrated that the extrahepatic ducts distal after the removal of the gall bladder. This result seemed to be due to interaction of the pressures exerted by the liver and the pinched at the duodenal end of the common bile duct. It seemed desirable to know whether the secretory pressure of the liver varied in species of animals with gall bladder from those without. The pressure of the liver in the secretory pressure of the liver is reviewed. The pressure was measured in the rabbit, guinea pig, striped gopher, and goat species that possess a gall bladder and in the white rat and pocket gopher species that do not possess a gall bladder.

From the results of the experiment the following conclusions were made:

1. The secretory pressure of the liver was found to vary considerably in the various species of animal. The reason for this is not clear. There may be many causes, however, the presence or absence of the gall bladder does not seem to be one of them.

The secretory pressure of the liver appears to be somewhat greater in unanesthetized animal than in those under an anesthetic, but since the data obtained in anesthetized animal were only comparative, the conclusion that the presence or absence of the gall bladder bears no relation to the secretory pressure of the liver is justified.

Horsley J. S. R. construction of the Common Bile Duct *J. A. M. A.* 1908, 1, 88

According to Horsley, defects in the common bile duct may result from error in operative technique from strictures following ulceration or trauma or from neoplasms. Since excision of the gall bladder has become a frequent practice, the possibilities of injury to the bile duct particularly in inexperienced hands have become numerous.

Many methods of treating defects in the common bile duct have been devised. The author has introduced a method of transplantation of an everted vein. Theoretically the advantages are that the vein when turned inside out would have the endothelial coat outside and thus would become adherent to the endothelium of the peritoneum and the surrounding raw surface and the nutrition of the

vein be thereby readily established. The vein offers a thin well organized tube which should require a minimum amount of nutrition as compared with a thick tube of fascia and if the epithelium from the duct and duodenum could grow in from the ends of the transplanted vein a permanent tube of definitely organized tissue would probably result. However, these theories did not bear out in the experimental work.

Seventeen experiments were performed on dogs in which the following technique was developed:

The external jugular vein was used. A ligature was placed at the lower portion of it and after the vein had been dissected clean of fat, another ligature was placed at the upper end. The length of segment removed was double the length of the duct to be reconstructed. After removal a mosquito hemostat was inserted in the segment of vein at one end and grasped a bite at the other end. Then by pulling on the forceps the vein was turned inside out. It was kept moist with salt solution until ready for use. A suture of small tanned catgut was inserted at one end after the manner of a purse string suture and tied as not to constrict the caliber of the vein. Opposite the knot in the catgut a silk ligature was placed and left untied.

The common bile duct was dissected free and a serrefine whose spring had been weakened as for blood vessel work was placed on the upper part of the duct. The peritoneal covering of the duct was preserved as much as possible. A ligature was placed on the duct close to the duodenum and the portion between the ligature and the serrefine excised. A needle threaded with rather stout silk doubled transfixed the stump of the common duct. This suture was made long enough for the four strand to traverse the segment of vein. It was not tied on the common duct.

Mosquito forceps were then introduced through the segment of vein to catch the four strand of the tacho suture drawing them through. Two of the strands were threaded in a large needle passed through a short piece of small rubber tube and tied firmly to the other two strand. One end of the purse string suture was then threaded in a small curved needle and inserted in the duct about one third of an inch from its end. It was tied snugly.

While pulling up the vein and pulling down the tractor suture so that the stump of the duct was invaginated into the vein. Then the end of the silk ligature that was previously inserted into the vein was inserted into the duct at a point opposite to the insertion of the catgut. The silk was left long in order to bring up the omentum later on. In this manner the vein was fixed to the stump of the common duct which was vaginated into the vein.

A transverse or oblique incision was then made on the duodenum going down to the mucous membrane but not through it. At the point of incision farther from the common duct the mucous membrane was punctured. A silk or linen suture was passed through the edge of this puncture and

caught the vein in at least two places. This suture was inserted in the form of a mattress stitch. Then the tractor suture on the common duct together with the piece of rubber tube was pushed through the hole in the mucous membrane. The end of the silk suture that held the vein in position at the upper stump was then threaded on a needle and a piece of omentum brought up and held around the transplanted vein by means of this suture.

Of the sixteen experiments in the first and third dog there was no provision made for drainage of bile through the transplanted vein. Both died with leakage at the junction of the duct and vein, the vein having become a solid cord. Six other dogs either died or were about to die when killed within from seven to forty days after operation. In each instance there was occlusion of the transplanted vein. One died two days after operation, the abdominal wound having opened. Six were in fairly good condition when killed from nineteen to forty five days after operation. One dog was killed under anæsthetic three and one half months after operation. It had been well up to three weeks before being killed. It then began to look bad and became emaciated and jaundiced. Postmortem showed the reconstructed duct occluded and much shortened and the common and hepatic ducts enormously dilated.

From the experiments the author concluded that while it is possible to reconstruct the duct by using an everted vein the final result is unsatisfactory. In man the immediate danger of leakage at the point of junction could be avoided by drainage.

Microscopic sections of the transplanted vein showed a marked inflammatory round cell infiltration of the adventitia while the outer layer had very little infiltration.

The author calls attention to the fact that there seems to be what might be called a biologic law of the immunity of tissue near an irritating discharge to the effects of that discharge. It should be borne in mind when repairing defects of the common duct that subsequent contraction will surely occur if non immune tissues foreign to this region are used. The most satisfactory reconstruction occurs when the stump of the common or hepatic duct is sutured to the mobilized mucosa and submucosa of the duodenum. In this way epithelial and subepithelial layers of tissue that are accustomed to the biliary discharges are used and no more contraction should occur than would take place after suturing a wound in the intestine.

G. W. HOCHREIN

Deaver J. B. Acute Pancreatitis. *Ann Surg*
Phila. 1918 lxviii 281

The author believes it is no exaggeration to say that acute pancreatitis is more often unrecognized than it is diagnosed before operation in the first place because it is comparatively infrequent and there is no one sign or symptom that can be said to be pathognomonic of the disorder. Generally the desperate condition of the patient makes operation imperative without the formality of a definite

diagnosis. Also acute pancreatitis is frequently associated with cholecystitis, perforating cholecystitis, perforating gastric or duodenal ulcer, appendicitis, etc.

As to predisposing factors, obesity and alcoholism are sometimes mentioned. Age and sex do not seem to play a part in this respect. In the author's series of 15 cases, 11 were females.

The author believes that a sudden acute abdominal seizure, pain overwhelming in an apparently healthy, usually obese individual, accompanied by incessant vomiting, upper abdominal distention, a transverse resistance not easily elicited, weak pulse, subnormal temperature, collapse, and sometimes cyanosis should suggest acute pancreatitis. The previous history will usually reveal at least one, and usually more, attacks of severe epigastric pain which have been regarded as gall stone colic and have been treated as such. Not infrequently the first attack of this kind occurs during or soon after a pregnancy.

The surgery of the pancreas must be directed to providing an escape for the highly toxic pancreatic fluid. In other words, the pancreas must be drained.

Deaver is not always in favor of operating in a state of profound shock. He deems it wise to wait for a short time in order to give the patient a chance to rally and to wait for the peritoneal inflammation to localize. In the interim the Murphy-Fowler-Ochsner method of treatment is instituted.

Early operation is desirable. The presence of blood and fluid exudate in the pancreas requires incision and packing with gauze. Too free and indiscriminate an incision presents the danger of free hemorrhage, difficult to control. Scarification of the peritoneum over the gland should however be sufficient to allow gauze drainage to be brought in to direct contact with the surface. A few blunt punctures of the pancreas are of service in providing free exit for the contained blood, lymph and the obstructed secretion.

Two routes may be chosen, the transperitoneal or the extraperitoneal through a loin incision.

One of the most troublesome postoperative effects of drainage in acute pancreatitis is the formation of sinuses. Irritation of the skin over which the discharge flows may be avoided by protecting the skin with a bland ointment. In order to limit the activity of the pancreas, a strict anti-diabetic diet is found useful in promoting healing.

In conclusion, the author reports two recent histories which serve to illustrate some of the points contained in his discussion.

E. C. ROBERTS

Sherren J. A Note on the Surgical Treatment of Certain Diseases by Splenectomy. *Ann Surg*
Phila. 1918 lxviii 379

The author has carried out fourteen splenectomies for disease with one death. Nine of these were for splenic anæmia and Banti's disease, one for Gaucher's splenomegaly, one for hydatid cyst of the spleen, and two for splenomegaly with jaundice.

In three cases of the first group hæmorrhages had been the primary symptom. All of these cases were operated upon more than two years ago and not one has had a hæmorrhage since. In all the other case the changes in the blood picture were equally striking although complete recovery may not take place in the old case.

The author in conclusion therefore points out and emphasizes his conviction that all cases of splenic anæmia should be operated upon early. When cirrhosis of the liver has supervened although the patient may be restored to apparent health fatal hæmatemesis may suddenly occur.

G TERWOO

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES TENDONS CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Boorst n S W B lat rad Congenital Rad o
Ulnar Synostosis 4 J S g 98

Boorstein reports two cases of a comparatively rare surgical condition namely bilateral congenital radio ulnar synostosis. He quotes the early work of Feidt Wilkie and Thomas on this subject.

Two types of the lesion are met with but no sharp line of differentiation between them can be drawn. In the first class the radio ulnar fusion is associated with congenital dislocation of the head of the radius. The head of the radius is more or less normally developed and the point of fusion is below the head. The other type which is considered the primary or true radio ulnar synostosis is that in which the upper end of the radius is not fully developed but is fused to the ulna. The first of these types includes the head and extends several centimetres down the shaft. The first type is more frequently unilateral while the second is bilateral.

The author's first case occurred in a Russian laborer aged forty one. The man knew from early childhood that there was some deformity of the forearms but experienced no trouble in the arm and was able to work as well as any other laborer of his age. Both forearms were kept midway between pronation and supination. He was able to pronate freely but could not supinate. When he attempted to do so he had to rotate the shoulder and wrist. Flexion of the elbow joint as normal on the left side and limited on the right side which was probably due to a dislocation of the head of the radius. The X ray showed a distinct osseous union for 5 cm in the upper ends of both ulna and radius. The radius was curved outward a great deal producing a wide interosseous space between the bones at the lower end than at normal joints. No attempt was made to correct the deformity.

The second patient was also a Russian aged thirty four. There were fourteen children in the family seven of whom were living. All had no clubbing. The four male members had a peculiarity of having no hair over the cheek bones. Both humeri of the patient were very short. The elbow joint was in a position of cubitus valgus the forearms being at an angle of 160° to the humeri. Both forearms were kept in marked pronation. He

was unable to supinate them. If asked to perform some function requiring that motion he rotated the wrists and shoulders. The forearms were wider than normal. Flexion and extension were free. The left index finger was clubbed. X ray showed complete osseous union between radius and ulna at the upper articulation for a distance of 9 cm. The radius was curved a great deal to allow supination. The heads of the radius were not dislocated.

The patient suffered practically no inconvenience from this deformity. He was able to lift and carry a load of 75 pounds. Because of the family tendency to deformity as posed by the club finger and absence of hair on the buccinator this deformity is classified with those due to changes in the plasmodial cells.

The etiology of this deformity is practically unknown. The author's conclusions are:

1. Radio ulnar synostosis is not so rare as claimed by previous observers. These patients simply do not consult physicians and so pass unnoticed.

2. Patients with such deformity can perform excellent motions.

3. A hereditary cause can be attributed in some instances as proven by the second patient.

G W HOCHER

Dumas J and Malartic H. Osteitis of War (Nécessité de la désinfection)
H d P 98 1 44

The authors give the results obtained after twelve months in a special hospital for the treatment of non tuberculous bone suppurations. The patients had generally suffered fractures and had been treated and operated upon in various other hospitals some of them several times. The limb generally showed a large septic callus with or more fistulae and the soft parts had undergone more or less complete fibrous transformation.

The general treatment adopted consisted in widely opening up the osteitic area and drainage. Potentially septic antiseptics obturated the muscle and tilge grafts were used. Some wounds were primarily sutured others totally secondarily sutured. Various other auxiliary treatments were employed. The most constant and surest results were obtained from open treatment allowing cicatrization to be spontaneous without disinfection of the operated area rapidly and thus obviate recurrence. The employment of hypochlor

ite solutions prepared according to the technique of Dakin and Daufresne have unquestionably given the authors the best results with elimination of pus satisfactory appearance of the wound repairs and regular healing

The dressing is removed each day. It should always be done by the same person who will thus be enabled to judge of its progress from the state of the wound

The authors reported 628 cases of fistula. These cases on the average had been in hospital for fifteen months previous to their arrival in this special service and had on the average been operated upon four or five times. The tibia and femur were involved in about half the total number of cases. Sacrum cases of which there were 16 were the most difficult to cure. Among the 68 cases there was but 1 death this patient died from acute uræmia before operation

While secondary suture has given some striking successes on the other hand it often retarded recovery and this may in general be attributed to the bad condition of the sutured tissues

Of the operated cases 245 have been followed up 148 replied. Of these 142 were quite recovered but in 6 the wound or fistula had reopened

The results of this special surgical service for rebellious fistula and bone suppuration show that over 90 per cent of such cases can be cured by sufficient and proper treatment. W. A. BRENNAN

Hepburn H. H. Gunshot Wounds of the Knee Joint as Seen at a Base Hospital. *Brit. M. J.* 1918 II 338

The author summarizes fifty consecutive cases of gunshot wounds of the knee joint in all of which the synovial membrane was penetrated. It is a rare occurrence to find suppuration in a knee joint when the notes from the casualty clearing station say "Wound excised not penetrating"

Of the 50 cases under consideration 5 were complicated by demonstrable bony lesion and 25 were not. The synovial cavity is stated to have been washed out and closed in 27 cases 14 cases with fracture and 13 without fracture. Saline solution is stated to have been employed in 6 cases, eusol in 6 and ether in 2. The remainder were not specified

Bipp was introduced into the joint in two cases and flavine in one all three did well. The foreign bodies were not found or not looked for in 9 cases at the casualty clearing station. Five of these required removal at the base one was left embedded in the femur the other three being very small and the joints quiescent. It was found necessary to re-open the knee joint in 19 out of the 50 cases 12 being with fracture and 7 without fracture. Subsequent amputation was necessary in 6 of the 19 cases 4 with fracture and 2 without. Two patients died from septicæmia. In one successful case without fracture both knee joints were penetrated. All cases requiring more than dry dressing were treated with eusol

Since the fate of a wounded joint is largely settled at the casualty clearing station the treatment at the base hospital is largely expectant. Usually the third day after the journey from the casualty clearing station is the end of the critical period provided the man has been kept at that station for a week after operation. The general principles in treatment are evacuation of pus and all foreign material thorough cleansing with a minimum of traumatism the relative abolition of drainage tubes immobilization and preservation of the best possible functional limb

Repeated aspiration with or without lavage has not given results which warrant the delay in more complete drainage

Suppuration occurs much more frequently in the anterior than the posterior synovial sac. The synovial membrane appears to be more capable of dealing with micro organisms when the sac is completely collapsed. When pus forms in the popliteal bursa thorough drainage is difficult to obtain the tendency being for pus to track downward into the leg on the posterior interosseous membrane as well as upward along the femur with a bad prognosis. Of the 19 cases drained by lateral incision 7 developed an abscess in the posterior pouches. Six of these were treated by incision in the popliteal space and one by incision in front of the tendon of the adductor magnus four of these required subsequent amputation and one died

The author describes his joint drainage operation in which he uses Carrel tubes. After operation he places the limb in a Thomas splint and gives two-hourly injections of one half ounce of eusol into each Carrel tube and one thorough daily irrigation for three days. On the third day the tubes are removed and replaced by two tubes into the wound but not within the synovial sac and on the fourth day the last through and through irrigation is done. From that time on only superficial tubes and dressings are applied and the incisions in the synovial sac are encouraged to close. They are usually sealed up with lymph by the fifth or sixth day

Movement of the joint must not be encouraged too early on account of the danger of stirring up and liberating infection. The author usually starts passive movement when the synovial sac has been closed and the temperature under 99° F for ten days. V. C. HUNT

Langworthy M. Restoration of Function to Stiff Fingers. *In J. Orth. Surg.* 1918 VII 365

Immobilization necessary in the treatment of injuries to soft tissues or in fractures of the wrist or hand may result many times in stiff fingers. Fingers stiff in extension have been difficult to treat. Gradual flexion is better than forcible flexion under anaesthesia

The author's method consists of a plaster of Paris splint closely molded to the dorsal surface of the forearm and hand and reaching an inch longer than the fingers. The cast has incorporated several

thin pieces of ebbing extend ng longitud nally the entire length of the cast The cast is cut transversely slightly in front of each metacarpal phalangeal and each phalangeal joint the cut e tending do n to the webbing which acts as a hin e for each sect on of the splint

The splint is thoroughly dned prefe ably by baking in an oven Flexion and tract n is obtaned by adhesive strip extending fr m the t p of the finger splint being attached to the anter o surface of the ri t strap

The splint is fastened by st ips f adhe ive plaster extend ng around the rist and around the palm Flexion is increased each day the finger a e extend ed for a few minute bef re each applicati n of flex ionforce Two v eeks is the usual t me for cure

J J KURLAND

Meyerding W H Cy tic and F b ocystic D sease of the Long Bones *Am J O th p S g* 918 367

The author give the following ca e h stories A young oman twenty one years old ustaid a fracture of the right radius fifteen y a previou ly and no further trouble v as notic d until th ee years later when a tumor formatio as recogni ed n the same egion A specimen s remo ed and diag n sed as sa coma amputation v as advis d but re fused I am subsidid nd impro ement a ho n until several year later t whch time the tumor v as excised by removal f the upp three inches of the r ght rad us A di gnosi i giant cell sarcoma was made and the arm reco e ed pe fect function

Five yea s later a tumor devel ped in the r ght frontal region and about four year late a small mass appeared in the right tibia There as no pa n The frontal tumor felt cy ti on pre sure There was slight enlargement in the right tibia and femur The right ovary was enla ged Ton ils were large and chronically infl med Urinary is and Wassermann test were negative The late t roent genogram shows osteitis f brosa cystica in the right tibia femur and humerus The che t shows healed tuberculosis of the uppe right l be

The flat internal surface of the tibia was exposed and removed disclosing a fibrocystic degeneration which could be removed by a gouge and curette The alls were then crushed in the wound closed v ithout drainage and a large p essure pad bandaged firmly over the leg The following cas s show family disposition toward the disease Th father f ac tured the right fibula by a horse kick T o years later the right femur as fractur ed in a runa y but healed in six eeks Two years late the left femur was fractured in tripping Hi left leg was amputated because of po r union A small sinus in the stump emains His brother at th ge of eleven fell fr cturing the right femur Seventeen months later the left femur as fractured in falling from a horse Several year later he fell from a bicycle fracturing the left f mur L ter there was bending

at the site of fracture Two years later the right forearm was broken poor union followed Another brother had fi e fractures in about three years In one family there were twenty three fracture The mother and three ssters were healthy

The following case is of interest A man twenty nine years old sustained a fracture of the right humeru at the age of ten It healed and gave no fu ther trouble At fourteen the femur was fractur ed At seventeen the right femur v as fractured

hich was treated with a cast and walking attempted at the fifth week disclosed no un on Malposion persisted e r since requ ring the use of crutches Examination shows five ixths of an inch of shorten ing together v th p eudarthrosis and considerable angulation Roentgenogram sho vs a fibrocystic degeneration of the long bone involving the medulla mostly At ope ation the pseudarthr is as cut through releasing fluid a pece of bone from the upper f agment as removed and a St imman peg driven th ough the os calc and exten ion applied Five weeks later a bone trans plant f om the tibia was implanted by the intra medullary method and a Thomas extension splint applied Healing v s by first attention After th ee month there as firm union and good function The care se eral other case reports of similar nature

J J KURLAND

Mo gan J D Spur Like Formations of Bone Following Amputation *Arch Rad i E l e c t the p* 98 54

The article is based on the author s study of o e r 25 cases of amputation stumps by the radiographic method the studies hav been made at the Gran ville Canad an Spec al Ho pital at Ramsgate and N 15 Canadian General Hospital at Taplow It de c ribes the \ ray picture of a healthy amputa tion stump ho ing the bone rounded off clean surrounded by a fairly uniform shadow of the s ft parts Some bone atrophy may have occurred or a small amount of perio teal thicke ng be pre ent

The majority of cases studied by the author showed irregular ties in the end of the stump due to new bone fo mation thi aying f om a sm ll spicule to a relatively large wing of bone As a rule the ne bone projected in an up ard d rection They ere frequently associated with pain and d c mfort and al o v e responsible for the persistence of d charging sinuses In many cases it v as nece s ry to have a re amputation done in order to ob tain relief from the symptoms

A complete study of the literature as made a d the author comments on the paucity of reference to spur formations The importance of the quest on of spur formations at the present time explai ed by the changed condition occasioned by the war since (1) there h s never before been such a series of amputat on stumps for observation (2) nev r before have stumps been so system tically \ rayed as during the p sent war (3) owing to the trem n dous demand fo medical off e s occasioned by the

war many amputations have had to be done by men who have lacked experience (4) the wounds are almost universally in a septic condition (5) many of the patients have to travel long distances after operation before arriving at a base hospital during which journey great difficulties are experienced in the renewal of the dressings even if indeed it is possible at all. On account of these last four points it is hardly fair to compare pre-war amputations with those after war wounds.

The practical importance of methods to prevent the formation of these spurs is discussed the author mentioning the Bier method or the osteoplastic flap the subperiosteal method which is a modified form of the Bier technique and the apertosteal method. Steiger's observations show that satisfactory results can be obtained by any of the three methods provided (1) that the operation is properly performed (2) that primary union occurs and (3) that the stump is at an early stage accustomed to bear weight. W. A. EVANS

Stewart J. P. A Clinical Lecture on Ischæmic Myositis. *Brit. M. J.* 1918 II 151.

Certain injuries which in pre-war days were uncommon have become relatively more frequent since the present war. Among them is ischæmic myositis.

This is an affection of a muscle or part of a muscle resulting from local limitation of its blood supply. It is not due to total cutting off of blood but the muscle fibers suddenly deprived of an adequate circulation undergo coagulation necrosis. In the early stage oedematous swelling occurs in and around the affected muscles. Unless the blood supply is promptly restored coagulation necrosis occurs which is irreparable. Later the oedematous effusion becomes absorbed and the coagulated muscle fibers become replaced by fibrous tissue which rapidly contracts. Thus the affected muscles undergo shortening become firm and doughy until at last they are hard and board-like. The bulk of the muscle is only slightly diminished.

In peace the commonest cause of ischæmic myositis is the too tight application of splints or bandages. In war the commonest cause is obstruction of the main artery of the limb by ligation. Least frequent are the cases due to spontaneous obstruction of the main artery from embolism or thrombosis.

In ischæmic myositis from tight bandaging the fibrous sclerosis is usually not a diffuse but a patchy affair occurring at the areas of maximal constriction by splint or bandage. Immediately following the application of the splints and bandages there is a premonitory stage of swelling of the distal parts with coldness and cyanosis. There is also acute pain in the limb. The oedema and cyanosis subside in a few days but in the case of the forearm the fingers become drawn up. After days or weeks when the splints are removed it is seen that the fingers and wrist are stiffly flexed from shrinking of the flexor

muscles. Active movements are diminished or lost. The electrical reactions of the affected muscles in this variety may remain normal and sensory changes are usually absent but not always.

In war wounds it is sometimes found necessary to tie large arteries in order to check primary or secondary hæmorrhage or to arrest the growth of a traumatic aneurism. In some of these cases ischæmic myositis supervenes. This variety has several clinical differences from the group due to tight bandaging. Instead of having patches or zones of coagulation necrosis alternating with healthy zones in the affected muscles there are whole muscles undergoing diffuse coagulation necrosis. The affected muscles come to have a curious hard board-like consistency. The electrical excitability is often completely lost and well marked anaesthesia of the periphery of the limb is the rule rather than the exception. The sensory loss extending up along its outer border but not in the territory of special nerve areas.

Rarest of all are the cases of ischæmic myositis following spontaneous thrombosis of a main arterial trunk. In this variety there is no direct compression of the affected muscle nor is the artery directly injured either by trauma or by ligation. It undergoes spontaneous thrombosis as a result of extension of some inflammatory process usually in the peri-arterial tissues. Arterial thrombosis may also follow an embolus especially a septic embolus from the right side of the heart but such patients rarely survive to show ischæmic myositis.

Various ingenious operations have been devised to remedy the deformity of that variety of ischæmic myositis which results from tight bandaging and splints. The disadvantages of artificial lengthening of the flexor tendons are the extensive dissections and the prolonged after-treatment of the wound. A simpler operation is one which shortens the bones of the limb by excising an inch or more of bone but by so doing there is the formation of still more scar tissue in an already sclerosed limb.

It is better to attack this class of case as recommended by Robert Jones by careful and systematic stretching of the shortened tissues. In the case of the forearm the wrist is flexed by an assistant thereby allowing the fingers to extend. In this position small metal finger splints are fixed to each digit by adhesive strapping. Over these digital splints either at the first sitting or a day or two later is fixed a flat palmar splint so as to keep the phalanges and metacarpals in line. Next at intervals of two or three days the wrist is gradually extended a few degrees at a time until at last the wrist and hand are in a position of extreme dorsal flexion. Massage of the forearm muscles, hot applications and whirlpool baths will aid in softening and stretching the affected muscles. By such means a considerable degree of recovery can generally be obtained even in severe and long-standing cases although the best results are to be looked for only in the milder and more recent cases. V. C. HUNT

Fr weather S D Boot H Is a a Caus of Flat
Foot Soldier s Heart and Myalgia B i M J
918 313

In a normal barefooted man the balance of the body is so perfect that practically no effort is required to keep erect. The weight rests on the heels and outer sides of the feet, not on the arch or inner sides.

If the heel are raised from the ground by boot heel even a quarter of an inch thicker than the soles, the outer side of the foot is removed from the ground and the weight falls on the arch. The center of gravity is also thrown forward and in a man of five feet seven inches the head is thrown nine inches off the vertical by a heel three quarters of an inch high. To remedy this and to prevent falling forward the back muscles and the extensors of the thigh and foot come into action. Thus when a ordinary boot is used even with a low heel the influences tend to flatten the arch.

1 The weight of the body rests on the arch instead of on the heel and the outer side of the foot.

The peroneus longus and brevis pull the arch down.

3 The tibial anticus is out of action and no longer supports the arch.

The muscles concerned in preserving the erect position are in continuous contraction and get spastic or muscle bound and the calf and back muscles are constantly most affected in myalgia. In some cases the strain on the peroneal muscles gives rise to painful spasm. In a flat footed person the ordinary boots the peroneal muscles pull on the flattened arch tending to produce a downward curvature and cause pain by pulling the flattened arch against the sole of the boot. With heelless boots the peroneal muscles are no longer in contraction and as the arch no longer on the arch the strain is removed from the plantar muscles and ligaments and the arch gets a chance to recover.

A soldier of five feet seven inches weighing 54 pounds and wearing a heel three fourths of an inch thicker than the sole has the strength enough to be constantly lifting 56 pounds from the ground and trying to retain his balance. In a man loaded with 60 pound equipment this means that he has to support 6 pounds nearly doubling the weight he supposed to carry. This is doubtless one factor in the etiology of soldier's heart as every heavy even if healthy is not equal to the strain.

A woman five feet seven inches with an arch 5 inches wide and wearing a heel two inches high is thrown out of the perpendicular.

Sprained ankle the stoop of old age asthma or cough back and spinal curvature may all be partly due to the effect of heels.

A rational boot should have the soles and heel of the same thickness. Under the arch of the foot the sole should be curved with a convexity upward but not so convex as to cause pressure on the sole. The inner edge of the boot should be straight. The front part of the heel should not be curved up but

should be flat. In hopeless cases of flat foot a boot with no heel will at least be more comfortable than the present day boot. V C HEW

FRACTURES AND DISLOCATIONS

Chasse F B A Method for the Immediate Treatment of Fracture of the Femur on the Battlefield at the Site of the Casualty Br J M J 98 1 373

This method is not a rival of the far more satisfactory Thomas splint but one to be used at the site of the casualty. The principle of the method is the application of very powerful extension followed by fixation in the extended position. A stretch and two slings are required.

The following are the steps of the procedure:

1 Expose and dress the wound.
2 Adjust the loop of one sling to its maximum and slip it over the foot and up to the groin on the injured side.

3 Tie the knee and ankles together with three tailed bandages, any makeshift.

4 Place in the opened stretcher something rolled up for a pillow where the knees will be.

5 Place the patient on the stretcher so that his heels project an inch or two beyond the edge of the canvas.

6 Use the other sling to secure the feet firmly to the end of the stretcher. Wrap it so as to avoid rotation of the feet.

Gently raise the stretcher almost to perpendicular so the patient is hanging by his feet. Wait for the muscles to relax then extend by pulling the shoulders down.

8 Adjust the first sling so the loop is well behind the buttock and the grip plate of the loop almost on the surface of the stretcher and after very strong exertion fasten the sling securely. (This position of the grip plate tends to correct the flexion abduction and external rotation of the upper fragment.)

9 Leave the stretcher. Tie a bandage around the pelvis and stretcher. Lay a rifle (bolt removed) or other splint along outside of the limb and tie in position. P W S E

Henderson M S Mechanical Displacement of the Knee Joint J La 198 1 53

In this paper the principal conditions discussed are (1) displaced semilunar cartilages and (2) osteocartilaginous bodies of the knee joint. The anatomical basis for the frequency of displacement of the internal cartilage is found in the intimate association between the inner border of this cartilage and the strong fibers of the internal lateral ligament and capsule to which it is attached. Any tension on the capsule has a tendency to displace the cartilage. Some of the fibers of the quadriceps are inserted rather low down on the inner side of the capsule and this prolonged might pull in such a manner as to disturb the normal contour of the fibrocartilage.

Furthermore the anterior extremity of this semilunar cartilage is more or less loosely inserted.

It is generally conceded that injury to the semilunar cartilages very rarely if ever occurs with the knee in full extension. When the knee is flexed to about 150° and the foot everted and rotated outward the relaxed internal lateral ligament allows of some separation of the internal condyle from the internal tuberosity of the tibia. If the force continues with the foot in eversion there is a tendency for the tibia to rotate outward on the femur carrying with it the internal semilunar cartilage and as attempt is made to extend the knee the internal condyle of the femur rolls down on the anterior extremity of the cartilage and catches and holds it and unless the cartilage slips from between the bones it will be torn from its rather loose anterior mooring. If the rotation is considerable the condyle of the femur may catch the cartilage rather far back and rip it longitudinally through its middle.

In certain cases the capsule may be so lax that the cartilage will slip out when caught before serious damage is done. Pain, effusion and disability will ensue. At operation the cartilage appears normal but too loose. Removal of the anterior three fifths affords relief.

It is generally conceded that the patient should not be operated upon if there has been only one locking. In such cases a plaster of Paris cast is applied leaving it on six weeks; there will be but few recurrences. In cases where there has been locking for years the loose end of the cartilage may be palpated and may have deposits of calcium shown in the radiograph but as a rule the X-ray is of use only in excluding loose osteoarthritic bodies.

The author had a series of 101 operations on the semilunar cartilage and of these the external was removed but five times. The external semilunar should be removed only on a definite history of pain at the outer side of the joint in conjunction with distinct locking.

Next to the internal semilunar cartilage loose bodies have been the most frequent cause of derangement in the knee joint. Foreign bodies as a bullet or needle are infrequent in private practice but osteoarthritic bodies are often found. They may be produced by (1) direct trauma knocking off a piece of the articular surface of the internal or external condyle of the femur or patella (2) osteochondritis dissecans (3) osteochondromatosis (4) hypertrophic arthritis.

Koenig first described the condition of osteochondritis dissecans and advanced the theory that the end artery supplying this area became plugged and the part became undernourished and sloughed off. The joint is unhealthy and the slightest trauma such as a quick turn or the arising from a sitting position on the ground may produce the first symptoms. The number of loose bodies produced in this way rarely numbers more than two or three and careful inspection of the radiograph will disclose the source as a flattened area on the internal condyle.

In osteochondromatosis there is an associated synovitis the lining is inflamed somewhat thickened and pedunculated into teats. Some are fibrous and others cartilaginous becoming bulbous. They drop off and wander about in the synovial sac are nourished by the joint fluid and increase in size. There are factors which suggest these to be of the order of a new growth. In one of the author's cases there was a chondromatosis formation in the lower end of the femur which later became malignant; the patient died with metastases in the lungs.

In older people marginal osteophytic growths in marked cases of hypertrophic arthritis may break off and wander about the joint. In younger people with loose bodies there may develop a hypertrophic arthritis as a secondary condition. The symptoms produced by a loose body or bodies are catching or locking at irregular intervals associated with pain and perhaps effusion followed by a period of relief provided the body finds a resting place so that it is not caught between the articular surfaces.

Loose bodies of the knee joint demand removal. By means of the radiograph their position can be definitely determined. If only in the suprapatellar pouch they may be removed under local anesthesia. A sharp cutting needle is thrust through the skin directly into the body, thus fixing it securely before it is cut down upon. When the body is in the middle of the joint usually at the inner condyle the same incision is used as in removing an internal semilunar cartilage. If the entire anterior compartment must be explored the patella and lower fibers of the quadriceps may be split longitudinally. If some bodies are in the posterior section they may be worked through to the anterior. If necessary the posterior compartment of the knee may be opened at a secondary operation. In a fleshy person this procedure is attended with considerable difficulty and some risk. Palpation within and without and the use of long forceps may be necessary for the removal of all loose bodies in some cases. As many as 200 have been removed in a single case.

P. W. SWEET

Lane A. Fractures in Warfare. Practitioner, London, 1918, 21, 181.

The author describes the various types of fractures that are seen in warfare, classifies them and discusses the treatment. He lays special stress upon the fact that all are not compound fractures produced by projectiles but that a great many are produced from other incidents of warfare. The fractures are classified as follows: (1) simple (2) compound not produced by projectiles (3) compound produced by projectiles.

He states that simple fractures have often been mistreated by imperfect operative technique resulting in overlapping and angular deformity by disregarded axial relationships, non-use of proper plates and screws, and lack of proper after-treatment such as splints, extensions and braces resulting in non-union and deformity.

In compound fractures not produced by projectiles a surgeon must obtain accurate apposition of the fragments if he possibly can by manipulation, traction and splinting. If it is likely that no infection has taken place a plate may be employed with advantage. The character of a compound fracture depends upon the degree of infection; many may be no more serious than a simple fracture, while others may have all the risk of a compound fracture produced by a projectile.

In compound fractures produced by projectiles it is first important to excise any damaged soft parts and remove any obviously useless fragments of bone. No special treatment of the bone is called for other than extension to bring the fragments into apposition.

Overlapping should be unusual because of the free drainage of blood and serum, and destruction of large amounts of soft parts which form the ties in the length of the limb and which are not shortened in any degree as they are in simple fractures.

No operation for the restoration of deformed bones should be performed until all possible means of dress covering buried organs have been tried. Bone grafts are useful to fill gaps or to aid in union.

His conclusions are as follows:

1 Only in very exceptional circumstances is it advisable to fix fragments of broken bones together by means of plates and screws while the wound is foul.

2 If for certain reasons such a procedure is deemed necessary screws should not be inserted near the broken extremities but as far from the seat of fracture as possible.

3 It is advisable to postpone positive interference until the wounds have healed for some considerable time and until the tissues are in all probability free of organisms. This can usually be determined with reasonable certainty.

4 If any apparently septic focus is observed during an operation a culture and a vaccine should be obtained from it and employed at once should symptoms of infection of the wound develop.

5 Should there be any definite suspicion of the presence of latent sepsis irrigation by Carrel's or a similar method must be adopted at once. If not the wound should be closed completely at operation.

6 Every attempt should be made to avoid any shortening of the limb.

7 The apposition of the whole area of the broken ends is not necessary since the interval will fill up subsequently by bone if suitable means are adopted. Fragments of bone or callus should be saved and employed to fill any interval between the piece of the shaft.

8 Much heavier steel plates are required in this class of cases than are usually employed in the less comminuted fractures of civil life. It is most important that the muscles and joints which are in relation with the fractured bone shall be moved voluntarily by the patient as soon as possible after the operation in order to avoid stiffness and limitation

of movement especially in the case of the joints of the knee, ankle and foot. In order to obviate this trouble without risking the security of the junction the plates which are employed to retain the fragments in position must be as long and as strong as circumstances will permit. They should be secured by as many screws as possible. The plates that are often employed are quite inadequate for the purpose. It is obvious that such early treatment can not be adopted when the fragments are very fragile and the grip of the plate and screws are insecure.

9 Irviding no strain shall be exerted on the joint on likely to develop non union the sooner the patient who has been operated upon for fracture of one or more long bones of the leg is got up and about the more bone will be deposited and the more rapid will be the repair at the seat of fracture. For this purpose a good ambulatory splint is a necessity in certain cases.

10 Should the interval between the fragments be so considerable that union is not likely to take place even after prolonged congestion brought about by the use of an ambulatory splint the fragments should be secured in perfect alignment by a plate fixed vertically behind the center of the shaft. When this has been done a portion of one of the fragments which is usually equal in thickness to a third of the total circumference of the shaft can be shaved and chiseled off and secured over the interval between the fragments; any piece of bone removed to accommodate the graft in the other fragment being fitted to occupy such existing interval as may be left between the bones. If enough material cannot be obtained from the fractured bone to make a graft it must be got from some other bone.

11 Most of the failures of bone grafting for extensive loss of substance are due to the surgeon's depending on the unsatisfactory grip which the graft alone can be made to exert upon the fragments of the shaft. The essence of success depends on the absolute immobilization of the fragments of the shaft on one another and of the graft upon those fragments. It is obviously ridiculous to attempt to retain the fragments of bone in a useful position by bone grafts alone in these compound fractures produced by projectiles as it is in any fracture in which the material securing the fragments in position has to bear considerable strain. In grafting bone into gap in the lower jaw fixation is supplemented by interdental splints which lock the jaws.

12 Much has been attention about wire screws and plates which act as foreign bodies if used in simple fractures producing a rarefying osteitis around them. Should such rarefying osteitis exist it is undeniable evidence that the technique of the operator is faulty and not the procedure. The remedy is in the hands of the surgeon who must improve his methods. Frequent failures in unskilled hands have led many to attribute their want of success to the employment of steel plates and screws and to attempt to avoid sepsis by using other and much less effective means.

13 While the operative treatment of compound fractures produced by projectiles is the most important of all surgical procedures in warfare it is perhaps well to remember that it may demand a degree of asepsis mechanical skill resource and judgment in excess of that required for other operations for war conditions

14 Besides that of sepsis usually introduced from without though occasionally developed from a latent infection hemorrhage is the chief risk which is associated with these operations This can be best avoided by the use of very powerful hemostatic forceps which are left in position in the wound for as long as possible during the course of the operation A ligature is rarely required It is most important that the wound should be left as dry as possible When much oozing is expected to follow the operation a long drainage tube may be left in the wound for twenty four hours and so arranged that the extravasated blood may be carried free of the dressings The removal of the tube does not necessitate any change of dressings for they are not moistened by the blood C C CHATTERTON

SURGERY OF THE BONES JOINTS ETC

Jean G Deep Cutanization of Bone in the Treatment of Chronic Osteomyelitis (La cutanéisation profonde des os dans le traitement de l'ostéomyélite chronique) *Presse méd* Par 1918 xxvi 45

Jean does not like the continuous repetition of operations in the treatment of chronic osteomyelitis curettage he thinks is more or less blind and often results in the infection of healthy tissue without reaching existing infected foci

He removes sequestra by means of Doyen's spherical bone cutting instrument which is operated electrically This instrument gives regular cavities which are washed out with serum The results obtained by the various methods now in vogue of filling bone cavities Jean considers defective He prefers to strip the cutaneous edges of the wound and to invaginate and fix them in the bone cavity The method has given him excellent results and although not æsthetic they obtain rapid recovery W A BRENNAN

Mériel The Vicious Scars of War Wounds and Their Surgical Orthopedic Treatment (Les cicatrices vicieuses des blessures de guerre et leur traitement chirurgical orthopédique) *Re d'orthop* Par 1918 vi 203

Mériel refers to the functional disturbances which result from vicious cicatrization of war wounds No matter where situated the normal functions of the muscles are attacked and interfered with to a varying degree by fibrosis and adhesions Such patients are generally rendered temporarily incapable of resuming their military duties Mériel has during the past two years observed more than 200 such patients and has operated upon 160 cases

Operation commences by making two elliptical incisions circumscribing the cicatricial tissue at its junction with the healthy skin The bistoury then freely cuts down into the sclerous musculo-aponeurotic block of tissue by two similar elliptical cuts made at the union of the sclerous and normal muscular tissue The whole sclerous block is excised like a tumor taking care to leave none behind as this is often a source of latent sepsis

It sometimes happens that in the arm and leg tendons are found to be involved in the midst of the scar tissue In particular the non retraction of the central end of the tendon is almost constantly observed in tendinous injuries of war In 82 of his operated cases in which the tendon was involved the author only observed a retracted central end three times What occurs is that nature makes an attempt by means of the scar tissue to bridge the two ends of the tendon the anatomic continuity of the two tendon ends is established by means of the cicatrix Hence this fact must be taken into account when operating in such a scar and the cicatricial block must be disengaged in such a way that this anatomical continuity may be spared in order that the function of the tendon may be preserved

The author after trying other expedients has been led to the exclusive use of fat grafts as a wrapping for the isolated scar tissue connecting the tendon ends Such fat tissue can always be easily and readily obtained from the patient's gluteal region In 3 cases in which the author has used it he found that there was no absorption of the fatty tissue and that the scar tissue preserved its mobility

Treated in such fashion adherent scars of war wounds are no longer a source of functional disability A great part of the operated cases have resumed their military service others were benefited and fitted for the auxiliary service The actual results obtained were 48 per cent fitted for return to the army 32 per cent fit for the auxiliary services 20 per cent failures

The author points out that in the preliminary treatment at the front if all contused or even suspected tissues are freely excised the resulting scars are supple The later reparative operations are necessitated by defective tissue left behind in the first instance W A BRENNAN

Neumann Gernez and Autepage Bone Grafting in War Surgery (Greffes osseuses en chirurgie de guerre) *Bull Intém Soc de ch de Par* 1918 xlv 1291

Maclaure in submitting reports from these authors to the Society of Surgery of Paris reviewed the results of bone grafting during the present war

The following types of graft are distinguished

- 1 Total segmental end to end bone grafts comprising the whole thickness of the bone
- 2 Partial segmental bone grafts
- 3 Plate or lateral splint grafts The multiple peripheral splint grafts of Codivilla and Albee's centrolateral splint graft

- 4 Central intramedullary grafts
- 5 Subperiosteal lateral grafts
- 6 Pediculated autografts of various kinds

In September 1916 Mauclore collected 6 cases of bone graft in war surgery. 5 heteroplastic grafts with 3 failures. 4 homoplastic grafts with 3 failures. 52 autoplastic grafts with 7 perfect results in complete consolidations. 2 probably good results. 2 doubtful results. 22 failures and unknown.

A second series of 67 cases from September 1916 to July 1918 gave 45 success, 13 failures and unknown results.

Segmental end to end graft is the ideal treatment for loss of bone substance. Autoplastic grafts are preferable to homoplastic grafts and especially preferable to heteroplastic grafts in arthralgia as well as in civil surgery. Homoplastic bone grafts easily atrophy.

If grafting is impossible recourse must be had to Lambotte or Lane plate or to some other synthetic procedure.

Mauclore thinks that the splint method of Cuvilla requires too much manipulation and that in the employment of Albion's method the graft is thick enough.

There remains at present only the method of reparing large losses of bone substance. The segmental graft in various technique is the only osteoperiosteal grafts. As far as present knowledge goes osteoperiosteal grafts appear to Mauclore to be indicated for small losses of substance and the segmental graft when the loss of substance is 3 to 4 cm. Osteoperiosteal grafts are more easily carried out and good results are more constant.

W A B E

Osgood R B. Notes on Excisions of Septic Joints

Am J Orth P S 9 8 33

In this paper the author's object is to clearly state the thing not to do. That is to perform radical excision of septic joints but merely to secure proper drainage and remove a little bone and joint structure as possible. Bone fragment should not be removed unless it is completely dead so since fragments apparently dead many times useful for bone regeneration and are very strong or properly ankylosed joint.

In the author's experience radical excision of septic joints gives poorer result than no treatment at all. Painful incomplete ankylosis with union or flail joints are usually the end result after multiple operation. The results of joint excision in civil practice such as for tuberculous cannot be approached much less approximated by excision of the septic joint of arthritides. When ankylosis can be secured it should be at the useful angles laid down by Robertson.

It is to be regretted that the author did not discuss a wide open method of treatment of septic joints such as represented in the Mayo operation for acute pyarthrosis of the knee.

WILLIAM T. ALRIMER

Steindler A. Orthopedic Operations on the Hand

J Am Med Ass 9 8 11 288

Conditions existing in the wrist and hand compare favorably with those of the foot and ankle for reconstruction work. Since the position of dorsal flexion of the wrist is the one of greatest strength and usefulness it becomes essential and necessary that the wrist joint once brought into hyperextension should be held there rigidly so as to provide a firm stabilizing position. Many cases of flexion contraction or drop hand lend themselves to the application of tendon transfer with favorable results.

Reconstruction work of the thumb as carried out for the relief of (1) inability of opposition of the thumb and (2) inability of extension of the thumb. Great stress is laid on the mechanical and muscle educational side of the after treatment.

R B COLEMAN

Thévenard D. Skin Flaps for Closing Bone Defects Following Osteomyelitic Focus

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The not general treatment of tubercled osteomyelitis consists in opening up and cutting away the bone with gouge or chisel. But a large opening and thus free drainage is necessary. It is extremely slow surgery to have tried to fill these bone cavities by various kinds of fillings as well as by grafts and autoplasty.

The author's method consists in filling the bone cavity by means of a strip of skin cut in the vicinity. The procedure is very thorough as it is necessary that there should be neither suppuration nor any elimination of sequestra between the wound surface and the under surface of the covering skin layer.

The strip of skin may be pediculated or they may be moved to their position by sliding.

The method followed in dealing with a tibial diaphyseal loss of bone for instance is to make four incisions in healthy tissue about the lesion two transverse and two longitudinal joining the others the cavity to be filled thus between the four incisions. The transverse incisions continue inwards into the wound to the posterior half of the circumference of the leg. The incision carried edge on to the aponeurosis. Seeing the free lateral edge of the skin strip with a forcep they are then freed from the full length of the transverse incisions. The author says that there will be no difficulty in stretching the strip so that the transverse incision can be properly situated in the cavity to be filled.

The author gives detail showing method of suturing the shape of the edges of the skin strip to be approximated when it is necessary to fill certain types of cavities. The edges must join neatly without folds in the cavity.

No tampon or dressings can prevent retraction of the strips and they must be sutured to the iliac

of the cavity. The author describes and illustrates an ingenious method of suturing the sutures passing through the bone and muscle to the skin beyond the limit of the strip. The edges of the strips are brought together by finer sutures.

The author has obtained complete satisfaction by following this method in cases which had previously been operated upon several times and which had passed over three years in hospitals.

W A BRENNAN

ORTHOPEDICS IN GENERAL

Mebane T S The Foot Problem *Mil Surgeon*
1918 *Ann* 377

The author describes how the management of foot cases was carried on at his camp and the results obtained. He states the orthopedic surgeon's camp duties are (1) the prevention of foot trouble (2) the elimination of the unfit (3) rehabilitation of men with remediable foot conditions.

The first was accomplished by educational means the second by examinations and the third by the establishment of an orthopedic camp.

Educational methods comprise (1) lectures to line officers (2) care that the line officers receive foot fit men (3) care that enlisted men receive proper shoes.

In making examination the patient walks across the room mounts a table all visible defects being noted. The position of the scaphoid is noted with the thumbs toes are examined the joint motion noted the heel inspected and the length of the tendo achillis is noted also callouses and corns.

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SURGERY OF THE SPINAL COLUMN

Nutter J A The Importance of Cure in the
Diagnosis of Back Conditions *Am J Orthop*
Surg 1918 *Vol* 351

The author cites several case histories to illustrate points in the diagnosis of back conditions.

Case 1 was that of a man forty two years old who came with a diagnosis of tuberculosis of the spine. He suffered constant and severe pain for several weeks and the radiographic report was Pott's disease in the dorsal region. The X ray showed a marked foggy appearance of four or five vertebrae at the level mentioned. However on X ray the entire spine there was seen a marked liping in the lumbar region indicative of old cured rheumatoid disease. In connection the hazy appearance in the dorsal region can be disregarded safely as a sign of grave disease.

Case 2 was that of a somewhat similar condition in which the radiographer diagnosed tuberculosis of the first lumbar vertebra. Fresh X rays showed some irregularities in the outline of the fifth lumbar vertebra corresponding with well known congenital deviations from the normal. In addition the lumbar

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considerable pain while the spine became more and more crooked. She was wearing a heavy correcting jacket a series of which she had been wearing for a long time. Examination showed a severe scoliosis with a double curve and rib rotation. The X-ray showed an old healed tuberculous at the dorso-lumbar junction at which place the primary curve had occurred. A convalescent back brace giving moderate correction on to the deformity as applied.

Case 5 was that of a young woman markedly neurasthenic wearing a back brace believed to have Pott's disease of four years duration. On examination there is nothing except slight tenderness along the spine more particularly between the shoulders and in the lumbar region. Her feet are pronated and she had a vice-optosis of the shoulders. X-ray was negative. The condition therefore suggested an irritable spine associated with neurasthenia. A six months leave of absence and attention on to her feet and round shoulders is producing good results. J. J. KUR ANDER.

Maragliano D. The Clinical Value of the Albee Operation in Pott's Disease. (Il Valore Clinico dell'Operazione di Albee nel Morbo di Pott). *Pl. Rom.* 98, 57-89.

The author gives a historical sketch of the application of Albee's method in the treatment of Pott's disease and gives short clinical histories of 34 cases of tubercular spondylitis which he personally operated upon in his hospital service in Genoa since early in 1905. Of the 34 there were 8 deaths at different periods after operation due to the current disease or to new localizations; the tubercular process was lost to view before final judgment of the effect could be made; 23 are living and have been followed. In 10 of these patients recovery was

obtained and maintained in most cases more than three years. In 5 cases there are signs of recurrence after a period of apparent recovery or improvement. In 6 there has been no recovery and in 3 of these the condition is worse than before operation.

From the author's study of the nature of the disease and the applicability and indications for Albee's operation his impressions are clearly favorable to this operation. Lasting results would probably be more constantly obtained by prolonging the duration of the horizontal decubitus to five or six months and by maintaining the co-set for at least another six months. Albee's operation deserves to be included in the therapeutic armamentarium in use for Pott's disease and under certain aspects to be considered as signaling a notable progress. The conclusion may not seem to be warranted by the not very high percentage of permanent recoveries shown in the author's statistics but in averaging the objection the author points out that these patients all belonged to the poorest classes and among them only one or two would have obtained a recovery similar to that actually obtained if they had not been treated in this way.

In 2 of the cases in which the author was able to make an autopsy his findings confirm the views put forward by some others which modify the conclusions of Albee as regards free autoplasmic osteoplastic transplants. He finds that the transplant undergoes important degenerative changes but that it does not totally die. It maintains its primary characteristics for at least six months according to the histologic findings and judging from the radiographic findings for a much longer period in which the author is unable to define.

The article is accompanied by histologic and radiologic illustrations. W. A. BRENNAN.

SURGERY OF THE NERVOUS SYSTEM

Gibson A. Injuries to the Peripheral Nerves as Observed in Soldiers Returned to This Country for Reconstruction Work and Care. *J. L.* 98, vi, 585.

Injuries to the peripheral nerves in military work are astonishingly numerous. Unless actually looked for these injuries frequently escape detection. The author gives a brief review of the anatomy of a nerve.

When a nerve is cut changes occur in both the proximal and distal segments but more evident in the distal segment. All the constituents of a nerve fiber show changes which are characteristic of degeneration. If circumstances are favorable however the nerve path will be re-established. The process by which this takes place is known as regeneration. For many years there was controversy between the protagonists of central and peripheral regeneration respectively. One school believed that the new nerve fiber grew from the point of section toward the periphery the peripheral

portion of the nerve furnishing merely a path along which growth might occur. The other school taught that each segment of the peripheral portion of the nerve reconstructed anew the fresh portion so that the process of regeneration consisted mainly in a linking up of a number of new portions.

In gunshot wounds of nerves there are a number of complicating factors the most important of which is scar tissue. Almost without exception gunshot wounds of nerves involve the presence of sepsis many are associated with compound fractures of bone. When healing finally occurs and the necessary period of from four to six months has elapsed after cessation of all discharge such a nerve is found embedded in dense scar tissue which as a rule not only compresses it from the outside but has penetrated between the fibers strangling them individually. This scar tissue is always a disadvantage.

A second great difficulty is that during the time between the reception of the injury and operation

the muscles that are supplied by the injured nerve are allowed to become stretched by their antagonists with the result that various contractures develop. This condition may be avoided by appropriate splinting by the use of gentle massage and a light galvanic current.

When a case is presented for diagnosis one must ascertain first the existence of a real nerve lesion, second the location, third whether it is complete or incomplete, fourth if incomplete whether it is progressing toward recovery. He emphasizes the fact that the diagnosis of peripheral nerve lesions is almost entirely a matter of anatomy. One should know the nerve supply of each muscle and the point where the nerve branch enters the muscle. The sensory distribution of the nerve, the relations of the nerve to other structures at various parts of its course must equally be known.

In the examination three essential points are necessary: date of injury, date of complete healing, previous treatment. Objective examination is of course of chief importance. First is inspection of the patient. Note his attitude, watch him in action, look for alterations of shape, color, contour. Assist the eye by the use of a measuring tape.

Next is the sensory examination. Test with cotton wool for epicritic sensation. Test with a pin for appreciation of sharp and blunt. Test with the end of a fountain pen for deep sensation. Map out carefully the areas of loss of sensation.

After this comes the investigation of motor disturbance. Here one must bear in mind the muscles supplied by each nerve.

Lastly comes the electrical investigation. Muscles must be tested for their response to faradism and to galvanism. If a response be given to faradism it may be assumed that the nerve path to the muscle is still present. If no response be given to faradism but the muscle responds to galvanism it is taken as an indication that the muscle fibers are still excitable. When the muscle fibers show no response to either current it is an indication that the process of degeneration is pronounced and the time of recovery will be correspondingly prolonged.

Next is the matter of treatment. If one decides the lesion is complete then he must explore and attempt a restoration of the original function. This may consist simply in liberation of the nerve from a strangling cuff of scar tissue or in the removal of the portion of the nerve path which is definitely blocked.

If the lesion is incomplete one must ascertain whether there are signs of regeneration in the nerve below the site of the lesion. If so, the rate of progress sufficiently rapid to warrant maintaining non-operative treatment or is the progress so tardy that one should intervene and attempt to hasten things. To ascertain the rate of progress careful surveys at a definite interval must be made during which time the patient has been having steady treatment with massage and galvanism.

Most cases of peripheral nerve injury present in

addition to complete interruption some of the phenomena of irritation. Trophic disturbances are apt to be prominent. The skin will probably be dry or it may sweat profusely and the condition of glossy skin will be present. There is likely to be a considerable amount of edema and cyanosis. The nails will be much curved. The ends of the fingers will be narrow and conical. Beneath the nails a curious pad appears. Sometimes the phenomena of pain develop in a painless wound after liberation of the nerve from the strangling scar. The author cites a case of this kind.

In the cases of incomplete interruption there is frequently present a tender scar which is directly continuous with a nerve trunk.

In the non-operative treatment of nerve injuries there is only one principle, namely, that the muscles must be maintained as long as possible in good condition. On the one hand, very light massage and mild galvanism should be applied daily for months if necessary. On the other hand it must be borne in mind that a paralyzed muscle should never be overstretched. This may be done by the use of suitable splints.

In the operative treatment of nerve injuries the author advocates the use of a tourniquet. He uses nothing but plain catgut for coaptation and can see no reason for the use of either silk or chromic catgut. All scar tissue must be removed until the cut ends of the nerve appear in the field.

The types of operation employed are first, neurolysis; second, partial suture; third, end to end suture. In connection with the latter the author has tried several devices such as the lateral implantation of proximal and distal nerves into an intact nerve. In one case the external popliteal was inserted into the internal popliteal with an unsatisfactory result. A second operation was performed and by means of plaster of Paris casts keeping the knee joint fully flexed the ends were brought together. In two months the signs of regeneration were most encouraging. He has also made use of nerve grafts but the results have not been satisfactory in the four cases in which it was tried. In one case of lesion of the ulnar in the forearm the cut ends after full flexion of the wrist were still separated by a gap of over an inch. He used two stay sutures of No. 1 plain catgut and a fascial wrap from the thigh but it is too early to speak positively about the result.

In cases where nerve function cannot be restored tendon transplantation must be employed.

He has made use of a tube of the deep fascia over the vastus lateralis muscle to form an insulating tube around the nerve function. The results have been such as to lead to the conclusion that it does no harm, may sometimes do good, is usually unnecessary, prolonging the operation and that it forms no substitute for accurate coaptation without tension.

As to the prognosis, about 60 to 70 per cent will attain a large measure of recovery without operation.

Of the operated cases probably 90 per cent will show improvement which may proceed as far as complete recovery provided adequate non operative treatment is given and especially if the paralyzed muscles are kept relaxed and if deformities are foreseen and guarded against.

Nerve injuries demand for their treatment faith on the part of the surgeon and confidence and steady co operation on the part of the patient.

G. W. HOCHREIN

Mackenzie K. A. J. The Repair of Large Gaps in Peripheral Nerves by Neuroplasty. *Surgery & Obstetrics* 98 35

The author submits the case to illustrate the utilization of nerve flaps of both central and distal origin in order to bridge unusually large gaps in peripheral nerves.

The first case was resection of 63 inches of sciatic nerve for a spindle cell sarcoma which originated in the perineal connective tissue at the middle of the back of the thigh. In the first operation fifteen days after resection a flap 63 inches long of the popliteal artery lifted back carefully buried in muscle and tucked into a split skin flap in the stump of the sciatic nerve. Improvement followed but in 6 days after the resection a third operation was done. This turned back to the proximal sciatic stump a flap of similar length from the medial popliteal artery. Great care in handling as observed and the flaps as far as possible imbedded between muscle layers. Recovery of almost complete motor and sensory functions in the affected arm has occurred.

The second case was a high thigh gunshot wound infection and septic thrombosis of the last three inches of the sciatic nerve and inches of both popliteal. In this case flaps of the sciatic were turned down and run through tunnels in the hamstrings to the proximal anastomosed popliteals. An almost complete return of function followed.

In the third case a one and a half inch flap from the proximal stump of a divided musculospiral nerve was turned down. This was done with success and complete return of function in the presence of an ununited osteomyelitis compound fracture of the humerus which was cleaned out and plated at the same time.

The author's conclusions follow. The study of this limited group of cases would seem to warrant certain deductions namely (1) that regeneration and recovery of function is promoted by the use of nerve flaps (2) that both central and peripheral flaps can be used for such purpose (3) that a peripheral flap by lying down a nerve path may promote regeneration over a great gap in one case quoted ten and three fourths inches (4) that the approximation of nerves and their epineurium should be done in all cases with the least possible delay (thus would apply equally to infected as to clean cases) (5) that the arrest of trophic shock can be promoted by carefully closing the gap by flaps (6) that unimpaired nerve tissue should always be utilized for

the effective repair of damaged nerves (7) that in their repair nerves can be successfully sequestered in muscular tissue so as to promote their own regeneration and that of the muscles in which they are embedded (8) that the principle of sequestration can be utilized in proper cases so as to avoid infected wounds and also scars and other obstacles to nerve repair.

Erving W. G. Orthopedic Treatment of Nerve Lesions. *American Journal of Orthopedic Surgery* 198 346

The orthopedic treatment of nerve lesions is discussed in a concise systematic tabular form. The well recognized means and methods of preventing deformities subsequent to partial or complete paralysis of the important nerves are outlined. The usefulness of properly applied massage, diathermy, and galvanic and faradic electricity is noted and the value of these methods to maintain a muscle in good condition while regeneration of its nerve supply proceeds is clearly shown.

The operative treatment described goes no farther than to suggest freeing a nerve when compressed by a cicatrix or to join its ends when continuity is destroyed. No method is given for bridging a gap when the nerve-ends cannot be approximated.

WILLIAM TH. LIME

Corti A. Experimental Research on the Protection of Nerve Wound (Experimental Research on the Protection of Nerve Wound). *Chirurgia* 198 33

The author refers to the mechanical protection of a tract of injured nerve by wrapping rubber or some organic substance around it and especially to the method initiated by Foramitti of using pieces of fresh artery preserved by a special process. The preservative process consists in immersing the piece of artery in a 5 or 10 per cent formal solution for two days, washing in water, boiling for twenty minutes, and then keeping it in strong alcohol.

To amputate the nerves in animals. The author has also tried the method in clinical cases of wounded soldiers.

The experimental and clinical results show that preparations of arterial tissue preserved in this way and used as a protective covering of injured nerve tracts are well tolerated and act as foreign bodies without deleterious effect. It is necessary to immerse the wrapping before application in a sterile solution for a few moments in order to get rid of the alcohol in which it was preserved which may have an unfavorable effect on the injured nerve fasciculus.

The study further demonstrated the very great resistance of arterial tissue thus employed. In the clinical case the arterial tissue was removed after 225, 194, and 305 days respectively. This resistance to dissolution is especially observed in the elastic elements of the arterial walls and it is this kind of tissue which particularly should be used if there is need for long protection of an injured nerve. Very

tissue is also very resistant. It is probable that arteries of muscular type offer a different grade of resistance.

The applied arterial lamina according to the author's view is a barrier to invasion from the tissues external to the nerve; this resistance and its duration prevent any direct attack and the relations established between the protective covering

and the connective tissues proper to the nerve cannot be other than favorable.

Knowledge gained in the field of nerve reparation and the record of cases in which functional recovery is only effected after the lapse of a long period indicate that the use of artery is advantageous and preferable to other substances which are less resistant and less durable.

W A BRENNAN

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS ULCERS ABSCESSSES ETC

Janeway H H Treatment by Radium of Cancerous Mucous Membrane *Am J Roentgenol* 1918 v 414

Extensive use of radium in the treatment of cancerous mucous membranes at the Memorial Hospital has demonstrated two facts: first that within the time limits of the author's work single applications were often sufficient to cause apparent complete retrogressions and second in the larger lesions where this favorable result was not obtained the lesion had become much more of an operable one than it was before treatment.

Thus in 21 cases of cancer of the lip 8 of the superior maxilla 9 of the tongue 3 of the tonsil and 1 of the soft palate complete retrogressions were obtained. A number of patients with cancers of the larynx have been greatly improved and definite temporary improvements were obtained in cancers of the oesophagus. Cancer of the rectum offered a most important and fruitful field for radium therapy and in 8 patients clinically complete retrogression was obtained. The most promising field of radium therapy among the mucous membrane cancers was cancer of the uterus and practically uniformly good results were obtained in them. Five cases of mixed tumor of the parotid gland gave almost specific response to radium treatment. The author claims that in cases of cancer of the mucous membranes in equal stages of growth the character of the end result among cases cured by radium coupled with the ease to the patient by which this result can be obtained far surpasses the results of surgical ablation.

ADOLPH HARTUNG

Major R H Multiple Primary Malignant Tumors with Report of a Case of Carcinoma and Sarcoma in the Same Individual *Bull Johns Hopkins Hosp* 1918 xxiv 223

The presence of multiple tumors in the same individual has been for many years a subject of much interest. It was early noted and subsequently emphasized that with certain kinds of tumors the tumor formation was more often multiple than single.

The presence of multiple malignant tumors is however comparatively uncommon and Major

reports the following case as an example of this interesting condition.

A woman aged sixty years was admitted to the hospital with a tumor on the face. This growth which involved the right side of the nose and extended to the inner canthus of the right eye had been present for several years and was growing slowly.

The clinical diagnosis of rodent ulcer was made and X-ray treatments of the growth instituted. While in the hospital the patient complained a great deal of headache, had little appetite and at times talked irrationally. Death occurred rather unexpectedly on May 22, 1917, and the autopsy was performed two hours later.

The autopsy showed a marked bronchopneumonia of both lungs, a generalized arteriosclerosis and extensive scarring of both kidneys. The wall of the stomach was markedly thickened throughout, had a whitish semi-translucent appearance and cut easily. At the cardia of the stomach there was a large polypoid growth which showed some areas of ulceration on the surface. This mass also had ulcerated through the wall of the stomach in one place, forming a sinus which passed by the spleen and through the diaphragm to the base of the left lung when it was closed by dense adhesions. No metastases were noted.

The microscopic examination of the tumor in the stomach showed it to consist of masses of round cells presenting no especial arrangement and showing a small number of connective tissue fibrils. Microscopic sections of the tumor of the face showed it to be composed of large atypical epithelial cells arranged in nests and strands. In some areas there were epithelial pearls present and evidence of infiltration downward.

The gross and microscopic evidence in this case shows it to be an example of two quite different types of malignant tumors in the same individual: a carcinoma of the face and a round-celled sarcoma of the stomach.

In order to assist in the understanding of this interesting problem Major made a collection of cases and the various facts as to the location, number and nature of the tumors considered.

In all 628 examples of multiple primary tumors have been reviewed. The greatest number of these cases, 389, were examples of multiple carcinomata of the skin in the same organ or in each of a pair of organs. This group of tumors has been thoroughly

studied by Theilhaber and Edelberg and as their tables are very comprehensive no attempt has been made to add to their collection. Tabulations of carcinomata in different organs but belonging to the same system show 43 examples. While carcinomata in various organs not members of the same system of organs were present in 53 instances. In all 48 instances of multiple primary carcinomata were collected.

The number of instances in which examples of different types of tumors were found in the same person was much smaller. Only such cases were noted in 66 of which the tumors were in the same organ in 9, they were in organs belonging to the same system and in 48 cases the different tumors were located in various organs. In this group of interest to note that in over one half of the cases (54 per cent) the different types of tumors were located in the same organ. The uterus is the most common site of tumors of different types being represented by 15 instances. The breast and the thyroid gland each showed 10 examples.

The most common combination of different types of malignant tumors is that of carcinoma and sarcoma. Instances of this combination are noted 62 or 5 per cent of which were located in the same organ, seven located in the same system and 23 in different organs.

In the authors' own case it is difficult to draw any very definite conclusions from the presence of two distinct and different tumors. They might be regarded simply as coincident although the case would seem to be equally well explained by the assumption that the patient is predisposed to cancer and that subsequent metastasis in the organ produced malignant growths in both. A great variety of combinations of two different tumors obviously possible but this is the only instance noted in which the combination of carcinoma of the face with carcinoma of the stomach occurred. (R. E. B.)

Rohdenburg, G. L. and Bull, C. F. D. The Influence of Heat and Radium upon Induced Immunity Against Transplanted Anaplastic Thyroid Carcinoma. *J. C. R.* 1918, 11, 8.

Depression of the growth energy of a transplanted tumor by heat or by exposure to radium increases its susceptibility to the immunizing action of homologous living cells, whether they be normal or tumor cells. With the technique as described in this paper the addition of immunity thus obtained may be 100 per cent over the usual figure.

The increased susceptibility of treated tumor to the immunizing power of living cells is not in evidence when autologous elements are employed or when homologous tissue are introduced subsequent to tumor implantation.

Tumors which have established a resistance in their hosts have exhibited a strong reaction and obtained a blood supply not influenced by retardation of the growth energy with radium and

the simultaneous introduction of homologous living cells.

Thus none of the results lead in any way to the conclusion that the improvement described in human cancer under radium treatment is due to the stimulation of autologous cells or that benefit is to be expected from radium and previous or subsequent resection of homologous lymphoid tissue. Even though the tumors employed in these experiments had been cured the results could not have been transferred to man. Here the problem is to cure a spontaneous as distinguished from a transplanted neoplasm. As an animal cannot be immunized against its own tumor or with its own tissues it is readily seen that the application of such experiments to the human can hardly lead to a profitable result. (MAX KAHN.)

Cannon, W. B. Shock (L'état de choc). *Prog. Med. P.* 1918, 9, 8 p. 9.

The following are the conclusions reported by Cannon of Harvard University to the Franco-American Medical Society at Dijon.

In the shocked there is a concentration of blood in the capillaries indicated by the difference in heights between the venous and capillary blood column. This difference may reach an increase of 500 red cells per cubic millimeter in the capillaries. It is quite probable that the fall in blood pressure is noted in the shocked is due to the entrance of an insufficient quantity of blood to the left heart. A certain amount of blood seems to be lost from the circulation and the patient suffers if he were attacked by a severe hemorrhage. The lost blood exists to a considerable degree in the capillaries.

Cold has a pronounced influence on the production of necrosis of shock. A severely wounded man lying in a trench in good condition but while being transported to the rear may pass into a state of shock. His condition can be greatly improved if he is put in a heated bed and surrounded by enough heat to cause the normal temperature. It is probable that cold increases the loss of blood by reduction of capillary states.

In the shocked the alkaline reserve of the blood is reduced from the freeing of non-volatile acids which with the sodium drugging carbon dioxide. When this reduction reaches abnormal limits treatment is necessary.

The experimental relationship between the degree of the acid and the degree of blood pressure in the shocked.

If acid already exists a surgical operation may produce a marked fall in the blood pressure and a great increase of acidosis in a very little time. Therefore it is dangerous to operate in such cases. Recent findings have thrown much light on this.

A fall of the mean arterial pressure to about 60 millimeters of mercury during an hour is not accompanied by a reduction of the alkaline reserve but if the pressure fall to about 70 the reserve

begins to diminish and when the pressure falls to 60 it diminishes still more. The phenomenon can be explained from the fact that if the oxygen supply to the tissues is insufficient non-volatile acids like lactic acid are not oxidized and by uniting with the sodium of the sodium bicarbonate in the blood assist in developing acidosis.

7 If the low blood pressure is accompanied by hæmorrhage the critical point is higher than if there is no hæmorrhage. Thus if an animal has lost 50 per cent of its blood the mean pressure cannot be lowered below 80 without indications that there is a diminished supply of oxygen to the tissues. The two preceding findings explain the acidosis which occurs in patients suffering from shock and from hæmorrhage. Another factor can however come into play namely acid substances which are liberated by injured muscles.

8 If the blood pressure is so low that the oxygen furnished to the tissues is not sufficient the animal becomes extremely sensitive to anaesthesia by ether. A degree of anaesthesia which abolishes the simple reflexes can lower the blood pressure by 50 millimeters of mercury. The sensitiveness of the organism to ether in shock explains the fall of pressure and increase of acidosis in clinical cases.

9 It had been found that the same degree of anaesthesia is produced by nitrous oxide and oxygen is not accompanied by any fall in blood pressure.

10 If the arterial pressure is lowered either by shock or hæmorrhage below 80 and the circulation is then insufficient the pressure can generally be raised by the intravenous injection of Bayliss gum solution.

More than half the volume of the blood of an animal has been removed and replaced by this solution with survival of the animal. The effect of the solution is to increase the arterial pressure to a degree sufficient to produce a more rapid circulation. Thus the cells may be diminished in number but owing to the more rapid circulation they function more and avoid the bad effects of a lack of oxygen.

From these considerations the following practical conclusions may be drawn.

1 All measures should be taken to prevent loss of bodily heat in the shocked.

If hot water bottles are used they should be placed to the feet, abdomen, between the thighs and in the axillary region.

3 If the mean blood pressure falls below 70 or in case of hæmorrhage below 80 it will be preferable to increase it by a blood transfusion or if this is not possible by an intravenous injection of sterile warm gum solution.

4 Surgical intervention should not be undertaken in a shocked case if the pressure is not artificially raised above the critical point.

5 Nitrous oxide and oxygen are the anaesthetics of choice for the shocked or hæmorrhagic.

6 Every kind of activity needs a supplementary quantity of oxygen for the tissue. Every effort

should therefore be made to keep shocked patient in a state of rest. Acidosis will thus be reduced to a minimum.

W A BRENNAN

Mann F C Studies on Experimental Surgical Shock *Am J Physiol* 1918 *lxviii* 231

The article consists of four studies on experimental surgical shock. In the first study the subject is considered in a general way. It is emphasized that the condition termed shock by the surgeon is due to a large number of causes and that experimentally it is very difficult to reproduce the environment and all the phenomena which he calls shock. The author found it convenient to classify various conditions termed shock into two groups. The first group included those cases in which the cardinal signs developed some time after the exciting cause, the second group those cases in which a severe or fatal issue followed immediately or very closely the action of the exciting agent. The author suggested that each of the various theories concerning the etiology of shock are partially true but that not all of them explain fully the cause of the condition.

The second study has to do with the relation of anaesthesia to surgical shock. The effect of a constant ether tension and of slight variations of ether tensions on the different reflexes is discussed. The conclusion is that it is very difficult to study shock unless constant ether tensions which could not be varied by any action of the animal were administered.

The third study discusses the reflex inhibition of respiration as a cause of sudden death during operation. It was found by a study of the various respiratory reflexes under different tensions of ether that the reflex which produced inhibition of respiration was not abolished under high ether tensions in a similar manner to the excitatory reflexes of respiration. On the contrary it was found that this reflex seemed to increase and under ether tensions just high enough to abolish the eye reflex it was often possible to produce death by the stimulation of the fibers which inhibit respiration.

The author states that ether tensions that will decrease or abolish the excitatory reflexes of respiration do not seem to depress the inhibitory reflexes and that in most instances the action of the inhibitory reflex seems to be increased although this may be only a relative result. Ether tensions that will depress the respiratory center so that it will not respond to the increase of carbon dioxide in the blood usually will not abolish the inhibitory reflex. Under such conditions stimulation of the nerves inhibiting respiration will quite frequently produce death. This may be the process by means of which sudden death is produced during operation. However death due to inhibition of respiration should never occur under light surgical anaesthesia.

The fourth study concerns the relation of the capillary and venous beds to the signs of shock. It was found that the ligation of all structures of the limb of a dog except the major artery would

usually produce all the signs of shock. The relative amount of tissue involved by these ligatures was on an average approximately 15 per cent of the total body weight. These results following the application of the ligatures were found to be due to (1) stagnation of circulatory fluid (2) damage to large areas of tissue in such a manner that their mechanism for controlling food exchange and possibly fluid volume was impaired and (3) to the products of cell metabolism and cell disintegration. The probability of these factors being involved in certain cases of shock is discussed.

Starling E. H. The Nature and Treatment of Surgical Shock (Nature of the shock, hemorrhagic, arterial, venous, etc.) *Am J Surg* 98:1-309

Starling thinks that the essential factor in shock is not complicated by hemorrhage; the passage of the blood of the general circulation into the dilated capillaries which by a process of occlusion must be located in the muscles of the body. All other objective symptoms of shock are secondary to the circulatory disturbances. The explanation lies in the fact that men in the trenches are physiologically in a state of high tension or excitement with a high degree of muscular tonic tone and a high degree of tonic tone of the arterial system. The proof of this lies in the fact that the blood pressure of such men is almost always more than 100 mm Hg higher than that of men in the cantonments. Starling thinks that this high pressure is accompanied by an increased suprarenal production of adrenalin.

At the moment of wounding the man is in this state of high nervous tension, the general vascular contraction hypertension. This state is augmented at the time of wounding by the strong stimulation on which the sensory nerves then depend. But at the same moment there is an inhibition of all striated muscle so that the effect is produced an elevated vascular tonic tone with a low muscular tonic tone. One of the great factors maintaining the circulation in the muscles is thus abolished. Other factors contribute a greater blood supply to the muscles, the blood reaching them remains there and the muscular capillaries dilate. A visible phenomenon of interposition is produced. A diminution in the supply of oxygen to the tissue follows from which local anoxia results. The final result is a deficiency in the return flow of blood to the heart and a deficient circulation. The tissues deprived of their nourishment produce fixed acid instead of CO₂ with subsequent diminution of alkaline reserve. The capillary dilatation must therefore be considered as the primary and essential factor in shock.

Shock is therefore rather a state of hyperstimulation than a paralysis. All stimulating treatment is thus contra-indicated. Adrenalin and strychnine are harmful. Morphine is indicated. Rest to the normal pressure of the blood is indicated. But good results can be obtained from the much less difficult injection of saline solution to which

gum arabic and sodium bicarbonate have been added. The liquid recommended is a 5 per cent gum arabic solution containing 2 per cent of soda bicarbonate filtered and sterilized. An injection of 500 ccm of this is made in the shocked.

W. A. BRENNAN

Schumann E. A Study of Dystrophy Adiposa G. nitalls in Women *Am J Obst Gynec* 98:1-48

The syndrome resulting from the effects of deficient pituitary secretion upon the female sexual system may be properly divided into three clinical groups according to the sex epoch affected.

Such terms as amenorrhoea of obesity and lactation atrophy or superinvolution of the uterus are no longer correct since it seems reasonably well proven that both these conditions are but phases of a primary hypopituitarism.

Definite retrogression of the reproductive tract may follow deficient pituitary secretion in parous women of mature age and may and frequently does give rise to an erroneous diagnosis of pregnancy. The treatment for all groups consists in general measures and the empirical use of glandular extracts, the systolic blood pressure being a fair index of the particular gland substances to be employed, low pressure indicating pituitary, high pressure thyroid.

The prognosis is guarded in all cases as to recovery but is favorable in direct ratio to the age of the patient.

EDWARD L. CONNELL

Demoln A. The Chemical Constitution of Pus (Pus, its chemical constitution, its history, its composition, etc.) *Am J Surg* 98:443

The author has made a chemical study of the pus from arm and cold abscesses.

The pus of an arm abscess if examined microscopically is seen to consist of numerous leucocytes the majority being neutrophile polynuclears in a mucous substratum. Under the influence of inflammatory phenomena the leucocyte migration seems to be accompanied by an exudation of mucous substance forming the interstitial cement of the connective tissue. About 25 per cent of the leucocytes are living. In pus cultures at one time phagocytosis of another cytolytic predominates. Beside the intact leucocyte more or less altered polynuclears are found but even in very septic effusions degeneration never reaches complete cytolysis.

For chemical study the pus is suspended in a 100 chloride of sodium solution on shaken filtered treated by acetic acid precipitated tested with ammonia water etc. In a pus free from serum and blood there is but a small proportion of soluble albuminoids only about 5 or 6 gr per liter of pus. When the proportion of soluble albuminoid is not negligible it is a sign of a deep inflammatory process.

The pus of an arm abscess shows a notable proportion of albumoses and peptones which denotes the digestive activity of the leucocytes. Such a pus is

strongly proteolytic and digests the tissue in contact with it

Pus from a Pott's abscess or other cold non infected abscess shows albumin to the amount of 25 to 40 gr per liter. In purely serous exudates the figure may reach 60 or 70 gr but there are only slight traces of albumoses or peptones

Histologically such pus is characterized by a very accentuated granular degeneration of all enclosed elements different leucocytes lymphoid and epithelial cells of tubercular follicles etc

The pus of cold abscesses shows an absence of proteolytic activity which is especially due to the absence of any living elements. It is dead pus

Chemically the differential characteristics of pus from warm and cold processes are summed up in the following table

1 In warm abscesses the greater part is formed of insoluble material it shows the presence of soluble mucin and a substratum of mucoid substances it has little true albumin it shows the presence of albumoses and peptones shows cellular elements constituted of neutrophile polynuclears almost unaltered shows living leucocytes it is active from the proteolytic point of view

2 In cold abscesses the pus is always more or less serous it has a noticeable quantity of albumin (25 to 40 gr per liter) it shows only traces of albumoses and peptones the different cellular elements are in granular degeneration there is generally advanced polynuclear degeneration living leucocytes are absent The pus is inactive from the diastatic viewpoint

The pus from cold abscesses which are fistulous and secondarily infected shows mixed characteristics cytologically it is similar to the pus of warm abscesses but chemically it tends toward that of a cold abscess

W A BRENNAN

Miller J A P and Mueller T. Some Phases of Radium Action with Special Reference to the Hematopoietic System *J Carc Research* 1913 III 17

The immediate effect of radium on the blood is an immediate drop in the total white count which returns to the former level within twenty four hours. There may be an occasional secondary rise in blood count. The differential count seems to run parallel with the total white count with the exception that there is a tendency for the relative lymphocyte count to drop and of the polymorphonuclears to rise during the course of treatment. MAX KAUF.

SERA VACCINES AND FERMENTS

Fleisher M S. The Influence of Immune Serum upon the Reactions About Transplanted Tissues *J Med Research* 1918 XXXI No 1

In earlier articles the reactions occurring about homotransplants and heterotransplants of guinea pig kidney in immunized guinea pigs and rabbits were studied by the author. It was noted that in

homotransplants there was a slight slowing of regeneration and connective tissue formation in the first two or three days but evidently both regeneration and connective tissue formation was the same in pieces in normal and immune animals. Leucocytic reaction and invasion was however in the earlier periods distinctly more marked in the homotransplants in immune animals. In the heterotransplants the regeneration was entirely inhibited in immune animals the leucocytic reaction was more marked and the connective tissue reaction was less marked than in normal rabbits. In the heterotransplants the leucocytes invaded the tissue in immune animal very much more slowly than they invaded pieces in normal animals.

In one of the earlier papers it has been suggested that the inhibition of regeneration noted in heterotransplants might be due to factors other than the cytotoxins which are presumably present in the serum of the immune animals. It was suggested that the failure of the leucocytes to clear away from the periphery of the tissue might be a factor either the leucocytes might by some direct action prevent regeneration or they might act indirectly by inhibiting connective tissue growth and vascularization which is possibly essential for regeneration of the tubules. The delay in regeneration noted in homotransplants in immune animals at a time when the connective reaction was less marked and the leucocytic reaction more marked than in normal animals might also be interpreted as additional evidence of the influence of the leucocytes.

Because of these suggestive facts a series of experiments was carried out in which the influence of the immune serum upon regeneration leucocytic and connective tissue reaction was studied.

Pieces of guinea pig kidney were transplanted into the subcutaneous tissue of the abdomen of animals and removed and studied at various periods. At least four pieces of kidney were examined at one two four five seven ten twelve and fourteen days after transplantation in many cases a very much larger number of pieces was examined.

Guinea pigs and rabbits were injected with serum obtained from rabbits immunized against guinea pig kidney. The rabbits had been immunized by the intraperitoneal injection of a suspension of sterile guinea pig kidney four times at intervals of two or three days. The blood was taken from the rabbits ten to twelve days after the last injection.

The anti kidney serum was injected into the peritoneal cavity of the guinea pigs in some cases simultaneously with the transplantation of the tissue in some cases twenty four hours before the transplantation. In some experiments as much as two cubic centimeters were injected at one time and injections were also given on two or three succeeding days. As a rule however only one cubic centimeter was injected either once twice or three times as it was noted that the pigs lost weight and were evidently made sick when the larger quantities were

injected. At no time were injections of serum given after the end of the first week.

As a result of these studies the author concludes the following conclusions:

In passively immunized animals about homologous transplants the same reactions occur as in normal animals about heterotransplants there is possibly a slower clearing of the peripheral portion of the tissue of leucocytes but otherwise the effects seen in the leucocytic reaction are like those in normal animals.

When tissue is brought into contact with immune serum for a short time before transplantation the effects are possibly a slight and brief slowing of connective tissue reaction and reneaturation in homologous transplants. In heterotransplants there is interference with regeneration which however probably due to the interval elapsing between removal from the living animal and transplantation into the host and its slower invasion by leucocytes.

The results of these experiments will suggest that substances in the body fluid which immunize animals have but little influence in the clearing of transplanted tissue and that the slowing of leucocytic reaction is largely a part due to an action of the serum. The results further suggest that the more marked leucocytic reaction seen about transplants in either immune heterologous animal immune homologous animals is dependent and independent manifestations of the tissue. If these conclusions be correct it appears that in immunity to tissue transplantation tissue reactions and especially the reactions of leucocytes play a more important part than in the tissues called forth or produced by the body fluid.

GEORGE E. BE

Matse I and Régne I Sotherpy of
Gangrene of Wounds (Clinical study of 16 cases)
Lectured by the author at the 9th Congress of the
Surgical Society of Paris, 1908.

The authors made a bacteriologic examination of 106 wounded immediately on the arrival at the surgical ambulance. Non sporulated bacilli were demonstrated in 97 and of these 5 also showed sporulated bacilli. In all 297 carriers of the non sporulated (bacilli perfringens) type an immediate preoperative injection of antiperfringens serum was made. Of these 4 received a dose of 0.5 cm and 40 a dose of 40 cm of serum. In the case of the 5 carriers of sporulated bacilli septic vibrios etc. a dose of 10 to 20 cm of antiperfringens or tetracemic serum was given in addition.

Of the total 97 treated by serotherapy 5 developed gangrene and recovered 5 died of gaseous gangrene. In the earlier period the authors administered serum with a certain degree of hesitation being fearful of complications. To this period 3 of the 5 deaths can be traced. In the other 2 the effect of the serum was apparently to mask the ordinary symptoms of gaseous gangrene. For two days the patients showed no clinical signs. The

complete symptoms of massive gangrene appeared suddenly on the third day and the patients died after a few hours. Serum therefore may give a false security to the surgeon unless he is aided by a minute bacteriologic examination.

The 5 cases of gangrene which recovered received an average dose of serum varying from 80 to 100 cm.

The complications imputable to antipertussis serotherapy have not on the whole been many or serious. There is however one case of death which the author thinks might be due to the too short interval between the first and subsequent injections.

From the experience the authors draw certain conclusions. They think that rapid bacteriologic examination on the entry of the patient gives an indication for preventive serotherapy. It will show that the anaerobic microbes introduced into the wound continue to live and are in full vitality. A large excretion of septicemia is also indicated. It will also show the presence of cocci as well as give information as to the conditions of local resistance.

The author thinks that the usefulness of preventive serotherapy is sufficiently shown by the results obtained. Its systematic study should be continued comparing the bacteriologic and clinical findings.

W. A. BRENNAN

BLOOD

Hodges, Not on the Transfusion of Citrated Blood. *Med. P.* 98: 34.

The author recommends a four per cent solution of citrate can be simply dissolved in distilled water. He does not attach much importance to the question of percentage because the blood no sooner introduced into the system than the proportion changes and is diluted on by the blood renders it inoffensive whether the solution is hyper or hypotonic. The question of the ultimate strength is more to the point than to say the proportion of citrate in the blood once the withdrawal of blood terminates. The author proposed three grammes per liter. For a man weighing 60 kilograms the minimum dose of citrate that could give rise to accidents would be fifty grammes. In an exceptional case of intoxication by the citrate its effects can be instantly checked by the injection of a small dose of chloride of calcium. There is nothing from the transfusion of citrated blood in a wounded subject to create a risk of secondary hemorrhage the more so since any prolongation of the coagulation period could be forthwith remedied by the administration of chloride of calcium.

E. B. F. LICH

Agot, L. The Agitation of Blood Transfusion. *L. t. f. n. d. p. l. m. b. d. A. t. 1.*
(L. t. f. n. d. p. l. m. b. d. A. t. 1.)
(L. t. f. n. d. p. l. m. b. d. A. t. 1.)

Agote state that he was the first to have made a 1044 t. publ. h. the principle of the transfusion of citrated blood and to demonstrate its utility for

man of the injection of blood mixed with a certain proportion of citrate of soda as well as the preservation for a long time of the biological properties of blood when mixed with this citrate. This method is now universally practiced and it is an essentially Argentine discovery.

Many minor modifications have been made but they only refer to points of technique and do not concern the underlying principle. While some authors who have not apparently been fully aware of the history of the application of the method since 1914 have wrongly attributed this method to others Jeanbrau and Hedon in France who have most extensively used it in connection with war surgery have fully acknowledged the claim of Agote to priority of discovery he having been the first to apply it in a case of placenta previa in November 1914.

Although the procedure is a very simple one Agote says that it is surprising how many variations can be made in the details of the technique yet they are all reducible to a simple endovenous injection of a mixture of blood with a solution of sodium citrate. The efficacy of the method is now fully recognized and it only remains to determine the number of its possible applications. In America it has been used not only as a curative method but also as a resource preparatory to operations having a tendency to hemorrhage.

Agote keeps this point constantly before him each day increases the number of indications for the method but he is not yet prepared to make any further statements on this phase.

W A BRENNAN

BLOOD AND LYMPH VESSELS

Sencert L. Arteriovenous Aneurism of the Subclavian Vessels. Extirpation After Temporary Disarticulation of the Clavicle (*Anévrisme artériovoineux des vaisseaux sous-claviers extirpation après désarticulation temporaire de la clavicle*). *Bull Acad de méd Par* 1918 lxxx 114.

Arteriovenous aneurisms of the subclavian vessels are rare. Sencert reports such a case in a soldier not so much on account of the rarity of the lesion as for the operation employed for its discovery and the treatment which he believes is new at least in France.

The man had been injured by a piece of shell which penetrated from behind frontward in the subscapular region. His condition ultimately called for the diagnosis of an arteriovenous aneurism of the subclavian vessels.

Sencert made a horizontal incision from the external third of the clavicle as far as 2 cm beyond the right sternoclavicular articulation. At the external angle of the incision the clavicle was divided by a Gigli saw. The sternoclavicular articulation was opened at the internal angle of the incision. The cutaneous incision was then enlarged downward and outward as far as the anterior edge of the axilla and

the clavicle completely separated from the sternum. The subclavicular and substernal region was largely exposed and easily explored. The aneurismal tumor which was in large part due to enormous dilatation of the subclavian vein was located and dealt with in the usual manner by ligature and extirpation.

The man made a good recovery and the function of the upper limb has not suffered.

W A BRENNAN

POISONS

Basset and Lechelle. The Treatment of Surgical Erysipelas by Iodine Tincture (*Traitement de l'erysipele chirurgical par l'emploi de la teinture d'iode en badigeonnage sur la peau*). *Bull et mém Soc de chir de Par* 1918 liv 1408.

The use of iodine to combat infections of the skin or structures immediately beneath it has long been known. Sections of skin thus treated show that the iodine penetrates the epidermis and reaches pathogenic microbes deposited in the crypts of the sebaceous or sweat gland.

The authors have taken advantage of this action of iodine to combat surgical erysipelas. Although before the war the occurrence of erysipelas was quite exceptional it is frequently seen to accompany war wound. The authors have treated 5 cases with tincture of iodine. These were all limb cases. Not only was the involved area painted over but the entire limb was treated.

The treatment was repeated two or three times each twenty-four hours and continued until two or three days after cessation of the infective manifestations.

Tincture of iodine is rapidly absorbed and the healthy skin shows the brownish tincture which is an index of prolonged impregnation. The high temperature falls and there is rapid improvement of the general state. The spread of erysipelas is prevented. In no case was contagion to neighboring patients observed.

The authors believe that in an uncomplicated surgical erysipelas tincture of iodine is a more distinctly curative agent than any other medicament used at present.

W A BRENNAN

ROENTGENOLOGY

Bellaire R F. A Few Facts in Regard to Modern X-Ray Therapy. *Minnesota Med* 1918 1380.

The author maintains that success in roentgen therapy depends on the following points: (1) the quality of rays emitted (2) quantity of rays emitted (3) amount of filtration (4) distance of tube from the part (5) time of exposure to rays.

Underdosing stimulates malignant cell and overdosing destroys healthy tissue. Atypical cell are more vulnerable to the action of the rays than are normal cells and on this fact hinges the whole field of radiotherapy. There is reason to believe that a general effect accompanies the local action inas-

much as a general improvement is frequently experienced to go on simultaneously with the local and a lesion distant from the one under treatment may diminish or disappear.

The following conditions are amenable to roentgen therapy.

Cancer of the breast. Every case should be given the benefit of an early operation followed by intensive radiation. In this way the mortality and likelihood of recurrence may be reduced at least 25 per cent. Advanced cases do better and live longer when they are rayed and not operated upon.

Hyperthyroidism. More than 80 per cent of the toxic goiters will respond to the roentgen treatment and produce clinical cures. In all cases the chest should be rayed front and back to cover the thymic area.

Leukemia. Brilliant results may be achieved but as a rule the benefits are only temporary. Both the spleen and long bones should be rayed.

Hodgkin's disease. The roentgen may render the nodes to a specific treatment ever advocated for this disease. Cases not cured will be greatly benefited; life prolonged and symptoms alleviated.

5 Uterine fibroids. In properly selected cases 100 per cent cures may be obtained. Cases unsuitable for treatment include (a) pedunculated fibroid protruding through the cervix (b) cases in which gangrenous degeneration of fibroid is suspected (c) fibroid accompanied by carcinoma or those having undergone sarcomatous degeneration (d) fibroids which lead to acute incarceration of the bladder.

6 Keloids. Uniformly satisfactory results are obtained.

7 Superficial epitheliomata. Combined with the electrothermic coagulation method of Phalar, roentgenation is the method of choice.

Among other conditions mentioned which react favorably are chronic eczemas, ring worm, particularly of the scalp, beriberi, itch, chronic ulcers, boils, carbuncles, psoriasis, overgrowth of hair, hyperostosis, certain chronic fistulae and the artificial production of sterility. Malignancies of the deep-seated viscera occasionally yield encouraging results enough to warrant a trial when other measures are contraindicated or have failed.

ADOLPH H. RUTING

MILITARY SURGERY

NOTE.—Read the following abstracts of the military surgery which appeared in the Digest of Roentgen Therapy.

McKee, S. H. Some Aspects of Military Ophthalmology. *B. M. J.* 9 8 34.

It is essential to have in a military hospital unit a specialist in the province of ophthalmology. The soldier should always have a good field of vision in each eye and the eyes should be practically free from disease.

Unless a soldier's vision is improved considerably by glasses he is unwilling to wear them and the eye is only one reason which varies in precluding glasses to a soldier, namely that he is thereby changed from an unfit to a fit soldier. The author considers the less effective reaction of troops to the supply of glasses a grave mistake. It is a mistake to give a soldier a good myopia lens correcting small degrees of astigmatism and hyperopia.

The author has not seen an epidemic of conjunctivitis among soldiers and has seen very few cases of gonococcal ophthalmia. The chemist has almost disappeared as a military disease. Following the gas attack in France in 1915 the effective large number of cases of conjunctivitis.

Night blindness has been seen frequently and in a number of cases has been associated with true retinitis pigmentosa; it may be due to postwar hard work and light fatigue.

A positive Wassermann reaction in a high percentage of cases of the eye in military practice.

The author's cases of sympathetic ophthalmia among 3,000 ophthalmic cases.

The concussion following modern explosives leads to a great variety of fundus lesions, one of the commonest of these lesions is traumatic retinopathy characterized by diffuse clouding of the retina, numerous small exudates in the choroid and small dust-like opacities of the vitreous.

Dacryocystitis is not infrequently met with in military work and the author recommends the West operation.

V. C. HUNT

Manoury and Otlers. Symposium on War Surgery. (A. O. C. I. f. c. de chirurgie) *B. M. J.* 9 8 4 46 436.

The twenty-seventh French Surgical Congress was held at Paris in 1918 under the presidency of M. J. Ch. Rives. Representative of all the allied nations were present.

The opening address of Manoury dwelt upon the evolution of surgery during the present war. In order to explain this evolution in the surgical epoch, making the cervix could be pointed to it as simply the ingenious and well-reasoned application of modern techniques which have been known for a long time.

After experience in the Balkan and other recent wars, conservatism was the rule in the treatment of wounds. But early in the present war the evolution was rapid. Widening up of the wounded, the use of antiseptic in infected wounds, especially a trolley wound, became clinical.

Manoury traced the growth of the use of antiseptics and the corresponding development of the aseptic method depending on a rigorous scientific basis i. e. the bacteriological examination of the wound.

The great aim of surgery was now turned toward obtaining an aseptic condition of every wound even the most trivial. As an indispensable condition this was seen to call for early operation before infecting agents had secured a firm footing. Wounds had to be treated within the first twelve hours if possible in order to obtain good results.

The earlier tendency of the war medical service based on previous experience had been to evacuate all possible major cases to rear formations after preliminary dressings at the front. Only the most urgent operations were done at the front. The newer ideas of immediate operation in all cases reversed this policy and major surgery had to be brought up to the firing line. The evacuation hospital became a completely equipped surgical unit with full personnel, laboratories, radiologic and other necessary surgical appliances, including hospitalization and rapid motor surgical ambulances.

Manoury says that the vast changes involved in this new organization of the war surgical service was perhaps the greatest medical work of the war and had the most momentous effect in the treatment of the wounded. He pays a high tribute to the work of the staff as well as to the surgeons throughout France who shared in this work of surgical organization.

In concluding his opening address Manoury warmly eulogized the Americans and expressed his hope that after the war the intimate relations established would continue to the mutual benefit of both France and America.

The questions taken up for discussion by the congress were (1) the treatment and end results of gunshot wounds of the nerves (2) the extraction of intrathoracic projectiles (3) the surgical clearance and repair of losses of bone substance.

1. *Treatment and end results of gunshot wounds of the nerves.* All surgeons are agreed upon the necessity of operating upon such lesions. The most formal operative indication is pain. When observed immediate operation is generally called for and the results are generally good if the operation is early. Late operations may also give good results but in general good results depend on early intervention.

With regard to the technique when there is complete section of a nerve the only possible method is to resect the nerve at both ends until healthy tissue is reached and to suture. But in the case of incomplete section there has been divergence of opinion. Moreover Delorme showed that in cases where a nerve is more or less crushed or contused or even simply compressed liberation has not given much better results than abstention. Since 1915 Delorme has advocated extensive resection in such cases. This at first met with much opposition but

the discussion showed that many surgeons have come to the conclusion that Delorme's conception was correct and that in incomplete lesions of nerves extensive resection gives the best result. The resection must be with sharp cutting instruments and suture must be with fine vaselinated silk never with catgut. As a general rule grafts have not given satisfaction.

With regard to results Delageniere in 358 cases treated 236 by resection and suture with 88 per cent of success, 9 cases of resection followed by graft gave only 3 good results, 113 cases of nerve liberation only gave a good result when the compression was simple. Forge reported 130 cases of which he could follow only 80. In one sixth of his cases he got an excellent motor and sensory result in about half a good sensory but poor motor result in the rest no results. Generally the results reported by other surgeons have shown very satisfactory recoveries from resection and suture. Where there has been failure the result can be attributed to latent infection along the nerve trunk. Such deep infection may persist for months after cicatrization. It therefore seems necessary in order that nerve suture may realize the best results that such latent infection be attacked in addition to the ample excision of cicatrized nerve tissues.

The almost constantly good results obtained from suture have encouraged Delageniere to treat certain causalgias by section and immediate suture. His results were good. In similar cases Sicard and Dambrin and also Bégouin obtained excellent results from alcohol injections. This method is ineffective in the case of common neuralgic pains.

2. *Extraction of intrathoracic projectiles.* With regard to the operative indications for the extraction of thoracic projectiles the tendency of surgeons at the front seems to be toward non systematic primary intervention in the case of lung projectiles which procedure has become more and more frequent at the rear formations. However the tendency of surgeons is toward a secondary intervention about three weeks after the injury reserving primary interventions for these urgent cases which force the surgeon to an immediate and extensive operation.

In the case of the heart pericardium and mediastinum the projectile if small should be respected unless there are functional troubles.

With regard to the operative technique and results no matter what the technique of extraction it must always be preceded by a complete radiologic study by the surgeon and radiologist.

Petit de la Villeon's method of extracting small and medium sized projectiles distant from the hilum and mediastinum by forceps under the screen through a buttonhole incision has in 301 cases given 298 recoveries and 3 deaths. Others who have followed this method have reported almost equally good results. Although the method has been criticized as a blind one the objection does not hold in view of the constant good results.

GYNECOLOGY

UTERUS

Bland P B A General Consideration of Uterine Cancer with Special Reference to Its Diagnosis *1m J Obst N Y* 1918 lxxviii 554

Malignant disease is responsible for over 500 000 deaths throughout the world every year. In this country 80 000 persons die annually from this cause.

At forty years and upward one man out of every twelve and one woman out of every eight die of cancer. Thirty per cent of all cases of cancer occurring in women originate in the uterus. One woman out of every twenty seven or about 4 per cent die of uterine cancer.

In this country the mortality rose from 62.9 per 100 000 in 1900 to 18.9 in 1913. In studying these statistics it is interesting to observe that the North American Indian is practically immune.

About 87 per cent of all cases of uterine cancer occur between the ages of thirty five and sixty five. As diagnostic criteria the local symptoms are the most dependable and in order of frequency and importance are hæmorrhage leucorrhœa pain bladder and rectal irritability. **EDWARD L CORNELL**

Rubin I C The Pathogenesis and Further Growth of Carcinoma of the Uterus in Relation to Clinical Symptoms and Early Diagnosis *Am J Obst N Y* 1918 lxxviii 353

The present paper is based chiefly upon the study of the material of the Schottlaender laboratory and partly on cases which the author had the privilege of studying and publishing from the same laboratory in 1900 and since then in this country.

In the traumata incidental to childbirth there must result (1) dislocation and inclusion of surface epithelium and (2) eversion of cervical epithelium. Whether such heterotopic epithelium loosened from its physiological bonds and limiting membrane may in the course of time revert to an embryonal cell activity or whether it undergoes a qualitative biologic alteration similar to that of chorionic epithelioma is not yet determined. Certain it is that carcinoma arises with the greatest frequency upon erosion as a base and upon traumatized and cicatricial parts.

The cervix suffers the brunt of obstetric traumata as well as of infections hence the greater frequency of cervical carcinoma as compared to carcinoma of the corpus. On the other hand carcinoma of the body is most often associated with polypi or myomata. Whether the latter act primarily as chronic foreign body irritants or originate the metaplastic epithelium must also remain unsettled. Examination of a large number of cervixes reveals the very striking presence of deep seated erosion glands in

the cervix. This is particularly apt to be present in the isthmus region. The fundal end of the erosion gland sometimes extends to the outer limit of the parenchyma. Biologically such glands must secrete a substance different in character from the normal cervix gland. If such a gland becomes occluded at its mouth retention occurs and a chronic irritation results. This may lead to cell proliferation in a manner not unlike that produced by subepithelial paraffin injection (Fischer) or the repeated coal tar application of Yamagawa and Itchukaya. The malignant change occurs after a long period of irritation and is rendered more likely at that time of life i.e. after forty when the retrogressive changes set in and when the protective influence of the endocrine glands especially that of the ovaries begins to abate.

The deep seated situation of such cystic erosion glands would also serve to explain the markedly endophytic character of the carcinoma from the beginning and its long concealment.

Many conclusions are noted in regard to the pathology etiology symptoms and prognosis of cancer of the uterus. **EDWARD L CORNELL**

Brettner J Final Results of X Ray Treatment of Fibroids of the Uterus *1m J Obst N Y* 1918 lxxviii 415

At an age below forty five the X ray treatment for fibroids should not be the choice but should be employed only when operative measures are not advisable or are refused.

Between the ages of forty five and fifty five X ray treatment should be the method of choice and no patient should be deprived of the right to undergo it. With an open cervix and a distinct diagnosis of submucous development of a fibroid operative measures promise better results. Patients with relaxation and laceration of the genital tract should be excepted. These cause no symptoms while the uterus is large and above the pelvis but when as a result of the treatment the uterus becomes smaller and sinks down into the pelvis serious inconvenience is caused and operative interference becomes necessary for its relief.

Uterine hæmorrhages due to fibroids in women beyond the age of fifty five should raise a suspicion of sarcomatous degeneration and operative measures are preferable to any other form of treatment.

EDWARD L CORNELL

Ill E J Observation on Fibroid Tumors of the Uterus *N Y St J Med* 1918 xlviii 399

The author gives an extremely interesting resume of twenty two years of operative work upon fibroid tumors of the uterus and statistics of 520 cases or 7

per cent of all gynecological operations performed during this period. The indications for operation were rapidly growing tumors, pain, hæmorrhage, pain and hæmorrhage combined with incarcération sepsis (in tumor adnexa abortion), sterility complicating pregnancy, adnexal disease, ovarian neoplasms, carcinoma of the corpus uteri, sarcoma, ectopic pregnancy, normal pregnancy.

It is emphasized that a distinct indication for every operative procedure should precede the work proper and can be obtained only by careful history taking and watching the condition often for a considerable period of time. The operations performed during these twenty-two years reflect the history of operative technique in myomata of the uterus. The total mortality was only 4 per cent for all types of cases, a remarkable record when one considers the early work preceded the use of rubber gloves and the operation performed was a supravaginal hysterectomy with rubber ligation under long pins and fixation of the stump in the abdominal wound. One or both ovaries were left *in situ* in over 7 per cent of the cases and high amputation of the cervix was done if it was deemed advisable that menstruation should continue. L. K. P. I.

Kelly H. A. Two Hundred and Ten Fibroid Tumors Treated by Radium. *S. G. G. & Co.* Oct. 1918. 4

The only effective method of treating fibroid tumors of the uterus up to the present time has been surgical development with care through generations until the operation has become a skilled hands one of the safest of major procedures.

The author has operated in this way upon 100 women but now feels that the radium treatment which is without danger and which is effective in 90 per cent of the cases should be preferred to the operation which is after all major operation of mutilating character offering considerable risk to life and health.

He states his thesis with regard to the accomplishments of radium in this class of cases as follows: (1) control of hæmorrhage and clacking of menstruation (2) shrinkage of the tumors (3) in many instances disappearance of the tumors (4) in many cases even after two years the return of menstruation either normal or scanty. The case has been a mortality associated with the treatment of 20 consecutive cases.

Between the dates of March 3, 1913, and January 8, 1918, 100 cases of uterine fibroid were treated with radium by the author and by Curtis F. Burnam and 45 cases were operated upon either because the case as some contraindication to radium or because operation was preferred.

In 28 of these 200 cases the data are insufficient to complete treatment although 4 of these were markedly benefited, 7 have been lost sight of, 2 died of causes unconnected with the treatment, 13 are too early for results to be reported with certainty.

There are therefore 182 cases in which the results are known in 171 or all but 11 cases radium alone was sufficient to relieve the patient. In these 171 cases (93 per cent) the tumor is either gone or markedly diminished or the patient is symptomatically well.

In 5 of the 11 cases some complicating condition was present (ovarian cyst, gallstones, calcified uterus) in 2 cases operation was preferred to further treatment in 3 cases operation was found not to have been necessary as the tumor had decreased under treatment, 1 case proved resistant to prolonged treatment. Nine of the 11 cases were operated upon.

The fact should be emphasized that if radium fails the operation has simply been postponed without detriment to the patient.

The technique of the treatment includes a preliminary curettage both to rule out malignancy and to remove any small polyp which may be found to exist. The average inside application is for three hours with 500 mg. of emanation. A small glass bulb placed at the end of a metal tube sufficiently thick to screen off all but the γ rays. This tube is screened to a uterine sound and is then covered by a rubber cot. The cervix is dilated and the sound introduced to the top of the uterine cavity. The applicator gradually withdrawn not being allowed to remain longer than half an hour on each spot.

In the external treatment to shorten the time 4 to 5 grams of radium are being used and the entire treatment can be given in from five to six hours. In a young case the treatments internal and external can be given individually or combined in any desired method. At least seven weeks should be allowed to elapse before a second treatment is given and it should not be given if an amenorrhoea already obtained. Usually the second should be an external one. Some tumors reduce rapidly other slowly over a year or more.

Menopausal symptoms are usually not severe. In 50 per cent of the cases no menopausal symptoms were complained of in slightly more than 25 per cent they were moderate and in slightly less than 5 per cent they were marked.

Corscaden J. A. Radotherapy of Metriod in the Treatment of Uterine Hæmorrhage. *Am. J. R. Ig. I.* 98. 47.

It is now well established that by proper X-ray or radium dosage a temporary amenorrhoea may be produced in women under thirty that above that age the amenorrhoea is less certain to be temporary and that a fibromyoma may be made to shrink to insignificant proportions. The problems are the proper selection of case and proper regulation of dosage.

From literature and personal research Corscaden states it is now universally believed that the dependence of the bleeding on the corpus luteum is absolute. It seems almost certain then that in the pathological as well as in the normal uterus bleed

ing some disturbance of the graafian follicle in some stage of its development probably the corpus luteum is the essential factor whether this be in turn affected by other glandular substances emotion etc or not. The pathological bleeding is merely a variation in amount duration character or periodicity from the normal menstrual flow.

If then abnormal uterine hæmorrhage be nothing but a variation of the normal and its cessation is desired the logical procedure is to destroy the one essential element in the menstrual cycle i.e. the graafian follicle. It has been shown that next to the lymphocyte and spermatozoa the ripe graafian follicle is the most susceptible to the action of the X ray and radium. It needs but a step then to apply these agents to the graafian follicle to bring about the cessation of the normal or pathological uterine flow. The ripe follicle is very much more susceptible than is the primordial follicle and if the dose may be possibly regulated to destroy only the follicles of an advanced degree of development then a fairly definite period of amenorrhœa could be brought about.

With the grossly pathological uterus there seem to be only four groups in which there is any peculiar relation between the hæmorrhage and the pathological change. These conditions are acute pelvic inflammation retroversion ulcerative conditions including carcinoma and fibromyoma. In the first two the causal relation is obscure in the third operable cases are clearly without the realm of radiotherapy.

The excessive bleeding associated with fibromyoma of the uterus cannot be treated alone but must be considered along with the whole question of the proper treatment of fibromyoma. Before the use of roentgenotherapy the symptoms for which operation was advised were first excessive hæmorrhage second various symptoms due to pressure and third rapid growth or large size of the tumor mass.

The new problem is concerned with the selection of the fibromyomata which are suitable for radiotherapy and of those cases which should be operated upon. The results to be expected from radiotherapy are cessation of the bleeding and shrinking of the growth. This shrinkage requires varying lengths of time in different cases and should receive scant consideration from the radiotherapist. If a mass is pressing upon any organs or if it is of extremely large size i.e. over fifteen centimeters in diameter and if the patient be an excellent operative risk the mechanical removal of the mass seems the better treatment at the present stage of knowledge.

Hæmorrhage is the symptom above all others that should be treated by radiotherapy in those women in whom a permanent menopause is acceptable. In younger women radiotherapy becomes less satisfactory because in them the menopause symptoms must be considered unsatisfactory even if they do not in any way incapacitate. Radiotherapy in this class of patients should be reserved for

those in whom an operation is contra indicated being particular however to raise the standard of operability and to pay stricter attention to contra indications which would in the days before radiotherapy have been considered negligible.

Among the author's conclusions are the following X ray or radium depending on the dosage destroys the graafian follicles affecting the fully developed more than the primordial and thereby causes the uterine flow to cease.

The uterine flow is made to cease in the same manner even if it is associated with gross changes such as retroversion and fibromyoma.

In functional menorrhagia and metrorrhagia in women near the menopause radiotherapy is the method of choice while in younger women it should be used with caution.

Fibromyomata shrink and the uterus ceases to bleed after proper radiotherapy. Cases should be treated only when giving symptoms. Those tumors occurring in women in whom a menopause is acceptable are proper subjects for radiotherapy if pressure symptoms are not severe if the mass is not rapidly growing or if it is not of excessive size. The menopause should be permanent.

The presence of carcinoma of the uterus should be excluded before treatment of any kind is given for uterine bleeding in women over thirty whether a fibroid be present or not.

D. R. BOWEN

ADNEXAL AND PERIUTERINE CONDITIONS

Osborne O. T. Ovary Corpus Luteum V I
M J 1918 CIVIL 447

Just how much the activities of the ovaries may be stimulated by feeding preparations of the ovaries is difficult to determine but many times the precipitated menopause symptoms of ovarian extirpation are largely ameliorated by ovarian extract.

These disturbing symptoms are vasomotor disturbances hot flashes head flushings indigestion (perhaps due also to circulatory disturbance) the addition of weight mostly in the form of fat some times nervous irritability sleeplessness or the reverse i.e. unusual daytime drowsiness and mental sluggishness. How many of these symptoms are due to loss of ovarian secretion or to the sudden cessation of menstruation without pregnancy and consequently a stoning in the system without physiological need of the nutriment and salts of the blood which were previously lost has not been determined but both are factors in the condition. The normal menopause or the cessation of menstruation without pregnancy at a younger age will cause more or less symptoms and ovarian feeding may markedly improve the condition.

The author considers the use of ovarian extracts in the following conditions (1) after extirpation of the ovaries (2) for menopause symptoms especially when the onset is abrupt (3) for too slowly developing girls (4) when there is an apparent subsecretion of the ovaries in older girls and women

especially when a long course of treatment is necessary (5) in menstrual disturbances. He discusses the results obtained. He also records his results in the use of corpus luteum in (1) amenorrhea (2) overweight (3) dysmenorrhea (4) pregnancy (5) menopause cases.

Total removal of both ovaries is only justifiable in very rare instances.

It is important whether it is the ovary or the corpus luteum that furnishes the secretin that is most necessary for the mature woman's mental and physical health. It is a fact that many internal secreting glands are disturbed by the removal of the ovaries. Total removal of the ovaries before puberty deprives the development of the genital organs and of the beat. Till marriage after puberty stops menstruation causes artificial menopause and multiple then pregnancy and disturbance. The younger the adult woman so castrated the more serious are the symptoms. Castrated women are often left in a serious mental and physical condition. Feeling the officers ovarian and corpus luteum extract is only partially successful in ameliorating the reaction.

The rule for premenstrual and ovarian diseases should be:

1. As much of the ovaries as possible should be left.

If the operation is necessary to destroy the circulation and therefore the nutrition of the whole of both ovaries, the grafted fragments of the healthy part of the ovaries should be placed in the uterus so that all the ovarian tissue can be easily obtained and supplied and therefore live. If the ovaries are not present in the uterus and funicular tissue should be remembered that it is pedicled, sell and hence the tissue is non-dilatable tissue may cause premenstrual pain. The uterus, all the peritoneum, the labia majora, the menses, the venous blood, the abdominal wall and the external ilia have all been suggested for grafting.

3. If there is no healthy ovarian tissue for autografting, since total extirpation of both destroyed ovaries is not an emergency operation in the uterine connected, the large hospital generally could obtain a piece of healthy ovary from an ovophyllic and non-tuberculous patient for transplantation into the woman to be assisted. The necessity for obtaining such ovarian tissue could be as total extirpation rarely needed. Of course the surgeon cannot decide that there is no healthy ovarian tissue until the time of the operation but he should be prepared for such an emergency when there is a probability of the necessity for total extirpation. Ovaries removed from healthy women after sudden accidental death properly prepared would seem to be ideal tissue.

If these grafted ovaries or ovarian tissues live and function it may be two or three months before the fact is known by any symptoms or signs in the patient. The signs of success are a general feeling of health, absence or diminution of menopause symptoms and menstruation. Such grafts may live for a

time and then die but more or less embryonic ovarian tissue may have had time to mature and to begin to furnish the secretion so much needed by the patient.

Properly selected patients who have had the ovaries removed for disease and who have psychoses which are not cured by the administration of organic extracts might well be treated by grafts of healthy human ovarian substance. GEORGE L. BELL

MISCELLANEOUS

McCann F Recent Progress in Gynecology
Part I L D 98 C 94

This article deals with a brief discussion of the relation existing between the action and interaction of certain of the ductless glands and the various uterine and ovarian functions. The ovaries, corpus luteum and the posterior lobe of the hypophysis exercise control over the uterus and adnexa. There is a definite interaction between the ovarian corpus luteum and the menstrual decidua secretions and the hypophyseal secretion. In all probability many cases of excessive pain and uterine contractions during menstruation result in dysmenorrhea are due to excessive activity of corpus luteum. When one considers the influence of the secretions of the ovaries and the corpus luteum with their tendency to produce dilatation of the cerebral vessel, the swelling of the thyroid gland with a probability of frequent tempo a hyperthyroidism and the changes in the posterior lobe of the hypophysis at menstruation it is apparent that a sensitive or unstable relation of the gland to the secretions of the days of suffering prior to each menstruation which is entirely apart from the direct effects of dysmenorrhea.

The phenomena of labor and menstruation are essentially the same kind. Menstruation has been left in abeyance for the period of pregnancy by the presence in the uterus of the placental gland. The normal menopause with ovarian retrogression usually attended by coincident alteration in the thyroid and hypophysis. Failure of the glandular reaction offers a plausible explanation for the nervous phenomena often occurring during the menopause. Altered ovarian secretion is evidenced by menopause an indication of altered glandular interaction.

Lactation, amenorrhea, due to the mammary gland secret on a hormone secreted as a result of the stimulus of suckling, which has tagmies the corpus luteum. Apoptosis of the thymus is associated with hypoplastic ovaries. Hence early retrogression of the thymus results in the hyperplastic ovaries. Bandler therefore recommends the administration of thymus for persistent menorrhagia in young girls. On the reticular ground the use of placental extract has been suggested for menorrhagia and could seem to be indicated because of its antagonistic action on the ovary, pituitary body and the adrenal. These extracts valuable as they may be should not be used to the exclusion of other remedies. C. D. HOLMES

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Rhodes F A Diagnosis of Ectopic Pregnancy
Am J Obst N Y 1918 lxxviii 580

Of 6 ectopic pregnancies three were diagnosed correctly as unruptured tubal pregnancies. One wrong diagnosis proved to be a ruptured tubal on account of sudden pain in the right pelvis followed by vomiting with a temperature of 100 the case was diagnosed as acute appendicitis. The appendix was also much inflamed. In this case sufficient attention was not paid to a missed period and little bleeding.

Nineteen of the ectopic cases had pain, nineteen had irregular bleeding, fourteen had missed one or more periods, three could not tell. All had an elevation of temperature ranging from 99 to 101 F and a pulse rate of 90 to 140. Five had vomiting, fifteen showed a definite mass, about one half had enlargement of the uterus and very few thought they were pregnant.

Of the fourteen non pregnant cases, thirteen had pain, twelve had uterine bleeding, eight had missed their regular period and four were irregular. Thirteen had some elevation of temperature and increased pulse rate. In all but one of these cases the author was satisfied before operation either that the patient did not have ectopic pregnancy or that it was questionable. EDWARD L CORNELL

Strickland C G Caesarean Section in Eclampsia
Penn M J 1918 xxii 8

In this article the author discusses briefly some general conditions of eclampsia and the value of the treatment of the condition by employing caesarean section as the method of choice in a rapid delivery.

It is obvious that eclampsia is a toxæmia and while a definite type of poisoning whose point of origin is not known, pregnancy is its fundamental cause. While painstaking and unremitting care of all obstetrical cases will accomplish great good, there will always be some women whose metabolism is not equal to the added strain of pregnancy and who will go on to the development of convulsions.

A generation ago it was thought that sedative and expectant treatment should be instituted while now rapid delivery and active elimination are proper. Conservative measures have their place. In multiparae rupture of the membrane and a possible phlebotomy are often all that are required. In primiparae the problem is more complicated. If labor is well under way and the dilatation is progressing a bag followed later by forceps may be considered. Instrumental or manual division of the cervix is attended by too great a mortality and morbidity. Vaginal caesarean section is not easy of

performance in primiparae. In this type of cases caesarean section is the method of choice for the following reasons: (1) It is the most rapid method of delivery. (2) With an undilated cervix it is often the safest and cleanest method of delivery. (3) Through the operative bleeding which is free it accomplishes the purpose of phlebotomy. (4) It leaves the pelvic floor intact.

As this operation can be completed in from 30 to 35 minutes which is less than the average time for delivery by manual dilatation and version it requires the use of less anæsthetic. The bleeding is also under better control.

High mortality comes from late operations and from infections prior to operative interference. Ether is the anæsthetic of choice as chloroform produces an added strain on the heart muscle and the pathology of chloroform poisoning is similar to that of eclampsia. Local anæsthetics are contra-indicated on account of the inability to get the desired lack of freedom from the convulsion during the operation. C D HOLMES

Castano C A Utero Abdominal Abortion (Aborto utero abdominal) *Semana med* Buenos Aires 1918 xxv 149

A woman of twenty-four underwent a right oophorosalphingectomy for cystic ovaritis. Some months after recovery she returned to the hospital with symptoms which in conjunction with her previous history pointed to peritoneal suppuration due to appendicitis or some similar lesion. On operation the uterus was found covered by omentum and a tumor developed at the site of the right cornu. The tumor consisted of the stump of the right tube surrounded by an encysted hæmatoma.

On clearing the coagulum the uterine orifice was evident. Loose in the pouch of Douglas in the midst of coagulum a small ovum was found intact. The uterine breach was sutured and the appendix removed. Apparently an angular pregnancy had occurred in the right uterine cornu and very probably in that part where the tube had been sectioned. A rupture was subsequently produced the ovum expelled into the abdomen and a hæmatocoele formed about the tubal stump.

W A BRENNAN

Norris R C Indications and Limitations for the Induction of Labor *Am J Obst N Y* 1918 lxxvii 507

With an experience of several hundred cases of induced labor it is the author's conviction that the termination of a pregnancy after fatal viability for grave systemic diseases of the mother associated with pregnancy for diseases or accidents of the

product of conception and for serious disproportion in size between the fetus and the pelvis becoming more and more restricted to an ever decreasing proportion of cases. The remaining however several important indications for which it should be more frequently used.

In the last 5000 consecutive deliveries at the Preston Retreat labor has been induced 40 times (2.8 per cent) for the following indication: pelvic deformity 83 cases, toxæmia of pregnancy 36 cases, prolongation of pregnancy 5 cases, gestation (cephalic) case, grave cardiac disease 3 cases, acute hydramnion 1 case, fetal death 1 case. There has been no maternal mortality.

Labor should never be induced in a pelvis with a conjugate less than 8.5 cm and this minimum should be accompanied by a small child. Instrumental delivery after inducing labor should be avoided if possible and always delayed until the head is well fixed and moulded.

Induced labor yet has a distinct field of usefulness for pelvic contraction but it should be restricted to conjugates above 8.5 cm and must frequently be multiparæ with histories of difficult labor and lost babies. Primiparæ with conjugates below 8.5 cm unless the fetus is distinctly undersized are best treated by cesarean section. The proportion of cesarean sections has increased for the higher grades of pelvic contraction and the induced labors have increased for the lesser degrees.

Induction of labor for prolongation of pregnancy is one of its most valuable uses. Primiparæ with moderate pelvic contraction or with no malpelvis with fitting heads at term especially if the position of the fetus is posterior comprise a class of patients that has offered the most frequent indication for this operation and its results have always been most satisfactory.

It is always desirable to induce labor before the period of viability in advance of the period at which habitual fetal death has previously occurred.

Induction of labor after viability if the child has come into competition in recent years with abdominal delivery. There are many arguments on both sides of this question. The application of cesarean section to separation of the placenta, prævia or normally situated will soon find its proper place. Child will be less restricted in position.

Excluding mechanical obstacles by pelvis or fetus the limitations of induced labor are reduced by the word speed. One must have a degree of experience with the results of several methods to correctly judge the necessity for speed.

EDWARD L. CORNELL

Mintner M. L. A Positive Wassermann Reaction Which Changed to Negative at the Termination of Pregnancy. *Am J Obst Gynec* 1918 98: 1154

During the course of some experiments on blood from women it was occasionally observed that the serum from the same woman would turn a very

short interval of time give quite dissimilar reactions. Following delivery the blood rapidly lost its property of giving a positive Wassermann and the only factor which might account for this difference was parturition.

The total number of consecutive cases of mothers blood examined was 357 of which number 48 or 13.45 per cent were found to be positive. Of these 48 positive cases 16 of the corresponding cord bloods gave positive reactions. In 2 babies whose mothers blood was negative the sera of the cord blood was positive.

In 6 of these patients with positive reactions blood was withdrawn for subsequent examination at periods varying from twenty-four hours to two weeks after parturition. No postpartum blood obtained later than two weeks after delivery was examined. In the sera of 12 of these no appreciable alteration in the quality of the positive reaction could be detected while in the remaining 14 negative reactions were present.

Microscopic examination of the placentas of the 26 positive cases revealed in all fairly extensive pathological changes. The villi showed various degrees of endarteritis and endophlebitis with a marked increase in the stroma cell. The proliferation of the connective tissue was in some areas so intense that the lumina of the vessels were obliterated.

The blood of pregnant women giving an antepartum positive Wassermann frequently shows a negative reaction when the postpartum blood is examined.

EDWARD L. CORNELL

McConnell E. The State and Prenatal Hygiene. *B M J* 1918 365

The author calls attention to the lack of systematic antenatal care of pregnant women in general in Glasgow, Scotland for example. The death rate for the first four weeks of life was for three years (October 1909 to September 1912) 45.33 per 1000. This fact alone illustrates the vast scope of the work to be done by an organized system of antenatal care. Stillbirths and deaths from immaturity, although the most tangible sources from which illustrations may be drawn, very inadequately represent the total volume of life lost during antenatal states and therefore must not be taken to represent the true state of affairs.

The problem of child life is however only one part of the subject of antenatal care for conditions of the mother during the pregnant state frequently cause not only the death of the mother but of the fetus as well.

The author concludes by stating that it is the distinct duty of the state to more adequately look after the maternity question both prenatal and postnatal and insure the less fortunate state pregnant women the same medical skill and nursing facilities that are accorded the more fortunate sister who have means with which to purchase service.

HENRY B. MATTHEWS

LABOR AND ITS COMPLICATIONS

Sullivan R Y Rupture of the Uterus *Am J Obst N Y* 1918 lxxviii 589

The widened field of cesarean section increases the danger of rupture of the uterus and should be restricted more than it is at present for cases of mechanical disproportion and urgent emergencies.

By its therapeutic action pituitrin tends markedly toward rupture of the uterus and should therefore be withheld until the head is in sight and never used in cases of disproportion nor in the first stage of labor.

Adequate study of all obstetric cases before labor will greatly reduce the frequency of uterine rupture by instituting appropriate operative treatment in cases complicated by tumors, overdistended uteri, oversized child, and diseased uteri.

Internal pelvimetry is the guide to safety in disproportion.

Intensification of the management of obstetric work, especially in the selection of proper surroundings, will allow serious emergencies to be handled without embarrassment.

EDWARD L. CORNELL

PUERPERIUM AND ITS COMPLICATIONS

Zarate E Puerperal Uterine Gangrene (*Gangrena uteri puerperalis*) *Semana med* Buenos Aires 1918 xiv 439

Puerperal uterine gangrene is very rare. It was first described by Danyau in 1828 under the name of *gangrenous metritis*. The most notable report of cases has been made by Beckmann, who observed 12 personally in Petrograd and collected 28 among other Russian authors. It was he who suggested the name of puerperal gangrene.

The case now reported by Zarate is the first met with in Spanish American literature. The reason why 90 per cent of these cases are observed among Slavic peoples is by no means clear. It may be that in other countries it passes unperceived or is wrongly interpreted.

Clinically puerperal uterine gangrene begins insidiously without chills or fever, the pulse alone attracts attention. Lochia becomes dark and coffee colored, the uterus shows no tendency to involution, remaining large, hard, and sensitive

after a while the lochia becomes purulent and yellowish, sometimes there is perineal edema and infiltration of the labia majora. About the third week of the puerperium the odor and secretions have become extremely fetid and this only disappears with the expulsion of a slough of uterine muscle of foul odor. Favorable reactions then occur as a rule, but a fatal peritonitis may be evoked by perforation.

The dimensions of the uterine slough vary from 10 to 15 cm wide to 7 or 10 cm high and the thickness varies between some millimeters and 2 or 3 cm. It consists of muscle tissue, connective tissue, and vessels.

The pathogenesis of this rare and severe complication of the puerperium is not clear. According to Beckmann and others, the streptococcus is the provocative agent, but syphilis, diabetes, etc., have also been considered as contributory. Caustic intra-uterine antiseptic injections have produced necrosis experimentally. The author thinks that the condition is due to the presence of a streptococcus associated with some anaerobes such as the *perfringens*, which by their combined action weaken and destroy the defense reactions of the uterine muscle fibers.

The diagnosis of this infection is not difficult when the clinical picture is known, but some authors think that a diagnosis cannot be established without the escape of sloughs.

The prognosis depends on the intensity of the affection and its complications. According to Beckmann, the mortality is about 28 per cent due to perforation and septicæmia. The elimination of uterine sequestra is for some authors an indication for hysterectomy; the author thinks that such a radical procedure can only be justified on very clear cut indications of perforation.

In the author's case the woman was para IV. All births were premature and required artificial delivery. The woman was a syphilitic. The sloughs were eliminated on the twentieth day, after which recovery was normal.

Details of the histologic examination of the uterine sloughs are given, and from its study the author concludes that the explanation of the mechanism of the process must be sought in the elective action of associated microbes on the connective fibers.

W. A. BRENNAN

GENITO URINARY SURGERY

KIDNEY AND URETER

Spo ner L H The B cter iology of Tub ulous
K dn vs J M d R / 38 N

For 3e a popul r belief has exi ted that the septic namifit ons of tub culosi re due to a mixed infect on ith py e c o g n n that cavities contain ca cous nd pu lent material resulted from the a ti n f such o gan Leu cocytes n conne tion ith tuber ul u inf t n was supposed to ult f th a ne m ed in fecti n th igh t the f e e t t i n S h l b c n n g t see light h n he states that the deg e of such a le c cyt si i due t th t t t y f the tuberculo p ocess rther th n t r i by any other micr rhan

The p t pr f f the i te e r non e ist nce of mixed infect on tube ul us p e e can be bta ed only by a c ful b te l g al exam at n f such l ns su h tudy n t ul monary p oesse un at f t r v f t ca ns (a) because ll u h pr cedur s ust b nducted after de th and (l) nce ab c iti n r i instan es c mmu cut th the upp r al oute respirat ry p rgs lich a e n m lly the hab t t f a l g l t l r l l l

To th s th kid ex h l n cle t l e it i so re lly m vel n l t t ul l re nerly t n m l t t e

It a cl l e l f t l l t h p t n r t e m presenc t g m h f d l t n t h e ne from uch f d g s in l g t i u y unq pr t the po t m t m f u d g f l l c t y m r kidney pre e t n g u n f e t t

It is rens n ble to v t l l a c f t l e r cul t e s t i n t u h h ul q tly be come t l e a t of u nect u p e It al o to be expe ted t l t n s e i t t e u cute non tuberculo us n f c t i o n m y cu n t h p r e e of an act e tuberculo one l u t i t i the pu p e of this p p e to cons de not l r b m l t e f diseased p o c e s e but t d n n r t e l f mixed infection e t e s i n t t l e l e cul s p o s s and what clinical diagnost c sig l nce n v u h infection m y h a

The uth e rches the conclu on
1 Tl tube le bacillus can be culti ted in pure cultu f o m t b e rculous kidney
2 In ten k dney e am i ed positive e ults ere found in f fty p c n t of the cases
3 Dorset egg medlum the most satisf ctory for primary g o t h

4 With th medium nly forty per ent of the inoculated tub s showed growth in the positive cases
5 Fiv pe cent glycer ne agar is the most satis facto y medium for ec nda y culti t on

6 In no instance as there any e r dence e ther in th kidney or the ureteral urine of mixed i ffection
Tuberculous caseation and suppuration is due to the activit e of the tubercle bacillus alone

8 Non tuberculous infection of the kidney is produced by one or more organisms which are always isolated fr m the renal tissues or from the urete al urine and which grow readily upon simple c lture edia

9 The cl n cal diagnosi of renal tuberculo i s suggeste ted by the presence f acid fast bacilli in the u ne If a pu contain ng urine obtained from the ur ter l o s no gr th upon simple cultu e media i t r f rty e g l t h o r incubation another very imp r t n t l i n k i d led to the chain of diagno i s of tube ul i f the kid ey C E O C E B H R

MacN de W DeB A Study of the Acid Base Eq l b ium of tl Blood in Naturally Nephro p t l Animal and of the Functional Capacity of tl Kidney in Such An mals Following an Anrethet c J L p M d 9 8 x 5

As a e ult of the observations of Ophuls Pearce nd Dayton the fact i generally known that many of the lower an mal particularly the dog are usc p tible to a type of kidney injury which should be classed s a chronic nephropathy In a recent study of the naturally acquied chronic nephropathy of the dog these earlier observat ons have been confirmed the various nephropathic proces s have been classified and a cons deration of the pr se of repai in the kidney h s been under taken

In th tuly of 4 naturally nephropathic animals the utho found it p ible vith three e cepts to classify the kid ey injury as a chronic product ve type The three emann an mals showed the typical te iosclerotic type of kidney with ex ten e general scleros of the vessel The thoracic aorta in one of the anim ls as the seat of a fus form neu m In most of the kidney of the remaining 39 animal tle fo mation of connective tiss e was a f o c l p r c e onfined to the glomeruli f all the animal b th the capsule and cap llaries of the gl m erul p a t c y p a t e n the laying d n f connective tissue so that in th d fferent animal it was not pos ble to pecial e the gl m erular pathology into a cap ular and intracapillary glomerulonephropathy Hyaline degenerat on of the fibrosed capillary t f s was occasion lly observed

The format n of intertubular connect ve tis ue n the kidney s f these animal ha sho n no parallel w th the degree of fibros s which has taken place in the glomerul and fu thermore the e has ex t e d a notable d pr po tion bet cen the severity of the ch r n es in tl glomerul and the degr e of degenera

tion of the tubular epithelium. This observation has been recently confirmed by Stengel Austin and Jonas in a study of the chronic nephropathies in human material.

The following investigation has been undertaken with the object of ascertaining the difference in the response of the normal and naturally nephropathic kidney to Grehant's anæsthetic the principal anæsthetic ingredient of which is chloroform. The study embraces an investigation of the acid base equilibrium of the blood in these two groups of animals prior to and during the period of anæsthesia and the association of the changes in this equilibrium with the development of an anuria. The functional capacity of the kidney has been determined by the phenolsulphonophthalein test, the retention of blood urea, and the response of the kidney during the period of anæsthesia to various diuretic substances. Finally the relative toxicity of this anæsthetic for the normal as compared with the naturally nephropathic kidney has been investigated by a histological study of the kidneys at the termination of the experiments.

Dogs were employed in these experiments. Nine of the animals were healthy, varying in age from three years to thirteen years and one month.

An analysis of the experiments which have been presented in this study shows that animals may have a severe type of chronic kidney injury that is largely localized in the glomeruli without developing an acid intoxication which can be detected by a depletion in the alkali reserve of the blood or by a reduction in the tension of alveolar air carbon dioxide. These animals show a slight retention of blood urea and a moderate reduction in the output of phenolsulphonophthalein. The minimum output of the dye in a two hour period for the naturally nephropathic animals has been 52 per cent. The kidneys of these animals show an epithelial element which is well preserved histologically and does not show any acute degenerative change.

When these animals are anesthetized their response to the anæsthetic as compared with normal animals shows the acid base equilibrium of the naturally nephropathic animals to be clearly unstable for these animals rapidly develop an acid intoxication while the control animal maintains their normal acid base equilibrium. Furthermore when the acid base equilibrium of these naturally nephropathic animals is only slightly altered in the direction of an accumulation of acid ions the animals become anuric and fail to respond to a variety of diuretic substance.

In the control animal which are able to maintain their normal acid base equilibrium during the period of anæsthesia these diuretic substances induce a marked increase in the formation of urine. The development of the anuria by the nephropathic animals during the period of anæsthesia which coincides with the occurrence of the acid intoxication has been constantly associated with an acute degeneration of the convolution tubule epithelium

and without the development of any acute injury to the vascular tissue of the kidney.

From these experiments it would appear that in the naturally acquired kidney injury of the dog in which the chronic pathology is largely confined to the glomeruli the injury is not due to an acid intoxication. The experiments furthermore show that when such a kidney is subjected to an agent which leads to the formation and accumulation in the blood of acid bodies the epithelium rapidly degenerates and that with this degeneration the functional capacity of the kidney is arrested.

From the experiments as stated above the author draws the following conclusions:

- 1 The naturally acquired chronic glomerulo nephropathies of dog are not due to an acid intoxication.
- 2 Such an injury renders the acid base equilibrium of the animal unstable and susceptible to an agent such as an anæsthetic which tends to induce an acid intoxication.
- 3 When naturally nephropathic animals are anesthetized by Grehant's anæsthetic the principal anæsthetic ingredient of which is chloroform the animals develop an acid intoxication and become anuric and non responsive to diuretic substances.
- 4 The development of the anuria has been constantly associated with swelling, vacuolization and necrosis of the convoluted tubule epithelium.
- 5 In the kidneys of the e animals there occurs an accumulation of fat which is largely confined to the ascending limbs of Henle's loops and which shows a quantitative relation with the degree of acid intoxication.

GEORGE E. BEILBY

Rochet Treatment of War Traumatism of the Kidney and of the Ureter at Base Hospitals
(Conduite à tenir vis à vis des militaires atteints de traumatismes des reins et de l'urètre à l'arrière)
J. d'Urol. Par 1918 VII 337

Rochet's report was presented to the third conference of the Directors of the French Urological Centers and was mainly statistical.

1 *Contusions of the kidney.* The end results have generally appeared benign. Of 39 cases 15 completely recovered without sequelæ; under rest and medical treatment 7 still have pain in the contused kidney and minor disabilities. 6 show some persistence of hæmaturia. 2 have had a nephritis on the affected side. No old cases of contusion demanded operation for any kidney complication.

2 *Wounds of the kidney.* Eighty five unilateral wounds were observed by the author and others. Wounds of the kidney are benign if the organ is only grazed tangentially or simply traversed. They recover easily without appreciable inflammation or pain. It has been remarked that in some cases where the kidney at time of traumatism was young and healthy the reaction of the parenchyma was so great that the functional result was better than in the healthy kidney. Besides a nephritis occurring under such a condition is generally limited and does

not necessarily result in total and progressive degeneration of the gland. Among the end results in this series of cases there were 0 cases with persistent local suppuration, 5 with urinary fistulae, 7 with persistent sharp pains and painful movements, 2 with hæmaturia, 3 with pyelitic infective complications, 0 with nephritis, 1 with albuminuria, and 2 with secondary calculus. No case of renal tuberculosis was seen which could be referred to the traumatism. Neither was there any case of true or false hydronephrosis. In this series of cases operations were only necessary as follows: 5 times for purulent fistulae, 3 times a secondary nephrectomy for urinary fistulae and nephrectomy for pyonephrosis. Fifteen extractions of pyelocystecium in the kidney had to be made. Medical treatment sufficed in all other conditions.

3. Wounds of the kidney. The author has only been able to find 5 genuine cases, although several probable cases have been reported. In all cases the only treatment has been nephrectomy, which always gave recovery without compromising the function of the other kidney.

It is seen from the results that but few of these patients remain in the hospital and a secondary operation. Although the condition occurs spontaneously, the primary point is that the treatment suffices.

In the discussion, the author reports the following comments:

Ureter thought that nephrectomy should be systematically practiced in pyelonephritis following wounds rebellious to the usual treatment.

André thought that in urinary fistulae even if persistent one should be slow to nephrectomy if the kidney was not infected and if the case was an appreciable functional lesion.

Cathelin thought that at the first nephrectomy ought to be done only except rarely. Both at the front and rear formations conservative surgery should be the main aim.

Marion had seen 5 ureteral wounds. While such wounds may be very grave and give rise to severe complications leading to pyelonephritis, pyonephrosis and require a nephrectomy, yet in certain cases the aim may be a *stitutio ad tunc*. One of the important factors in recovery is perfect drainage of the wound.

Legueu thought that at the first abundant hæmorrhages are an indication for nephrectomy but that issue of urine through the wound is not in itself a sufficient indication. In the rear hospital, however, persistent flow of urine through the wound is generally an indication for nephrectomy. Foreign bodies in the kidney should always be removed. Legueu is dubious concerning the existence of the so-called traumatic nephritis following various injuries.

Pousson differed from Legueu as regards traumatic nephritis. He is quite satisfied concerning it from the evidence and thinks it may exist not only in the traumatized but also in the other kidney.

Pasteau favored conservative surgery as regards the kidney both at the front and rear formations. Outside of abundant hæmaturia which persists, purulent transformation of the kidney or cases where the kidney does not show any functional value, nephrectomy is generally contra-indicated in traumatisms.

W. A. BREX.

II. Pilonidal Tumor. Kidney and Ureter Abnormalities.

The author reports two interesting cases of fused ureters, the other bilateral double kidneys, pelvis and ureters.

The first case was a married woman aged thirty-one. She had had eight full-term pregnancies. Her present illness dated back four years when pain in the right renal region began.

Examination showed a well-nourished, vigorous-looking woman, evidently in pain and acutely ill. In the region of the right kidney was a large tender tumor. The urine was full of pus, temperature 101, and leucocytes were 24,200. X-ray showed the indistinct outline of a large kidney. Cystoscopy revealed the right ureteral orifice slightly dilated and ejaculating very purulent urine. Catheterization of the right ureter was stopped 3 cm up.

A diagnosis of right pyonephrosis was made. The left kidney was normal. The right and left ureters were fused.

The first operation was done under ether anesthesia. The right kidney was exposed and found to be greatly infected; it was quickly removed. The ureter was carefully dissected down for three inches so as not to ligate below its fusion with the left side and tied with No. 2 chromic catgut.

The patient made a very rapid recovery, but the wound continued to drain pus. Cholecystoscopy with indigocarmine revealed the same dense ejaculations of purple urine from the single ureteral orifice on the right side. It also appeared in the urine from the right lumbar wound.

At the second operation a midline suprapubic incision was made and the peritoneum peeled from the bladder, thus exposing the bladder end of the ureter more easily. The fusion with the left ureter was found just outside the bladder wall. The right ureter was ligated close to the fusion and the wounds closed. The woman made a quick recovery.

The second case was a woman aged forty-five years. Her present illness dated back many years as a pain in the right side.

Examination showed a rather thin woman with an easily palpable tumor in the upper right abdominal quadrant which extended back over the right iliac fossa and anteriorly one inch beyond the midline. The urine contained much pus. The temperature and leucocyte count showed moderate elevation. X-ray showed the indefinite outline of a large right abdominal tumor. Cystoscopy showed on the right side two ureteral openings 1 cm apart, one above the other. From the lower opening purulent urine could be seen to come. Two ureteral openings were

found on the left side and were each catheterized with No 6 I lead catheters

The right upper catheter drained freely a very purulent urine. The right and left lower catheters brought normal urine. Differential renal function was done by the injection intravenously of 0.6 mg of phenolsulphonephthalein which was excreted as follows from the right upper catheter not at all and the remaining right lower left upper and left lower catheters in six minutes and in fifteen minutes 5 per cent.

Fifteen per cent thorium was inserted into each catheter by gravity and an X ray picture taken which demonstrated a duplication of ureters and pelves on each side.

The diagnosis was bilateral double kidneys pelves and ureters one of the right kidneys being pyonephrotic.

Under ether anesthesia the right kidneys were exposed the large upper pole of the tumor so enveloped the lower normal kidney that it seemed dangerous to try to separate them. Therefore the pyonephrotic upper kidney was removed with the lower normal kidney *en masse*. The wound was closed without drainage and the patient made a quick recovery.

In the original article there is a diagram of the fused ureters and an X ray of lead catheters and 15 per cent thorium injections showing bilateral duplication of kidneys pelves and ureters.

THEO DROZOWITZ

Brunnick, K. F. C. A Bacteriological Study of Seventy Cases of Urinary Infection with Special Reference to Pyelitis. *M. J. Australia* 1918 11 3

The cases include pyelitis cystitis infection following catheterization for retention of urine after abdominal and pelvic operations and during typhoid and paratyphoid fevers, tetanus, cerebral hemorrhage, also infection following prostatectomy, nephrectomy, renal and ureteral calculi and several cases associated with a leucorrhoeal discharge. All the urines examined were sterile, catheter specimens.

In 68 specimens of urine 5 different types of Gram negative bacilli were found. 6 specimens contained combined infections of two or more organisms. *Staphylococcus pyogenes aureus* and *staphylococcus pyogenes albus* were found to be the infective agents in the remaining specimens each in pure culture.

The organisms were classified according to their motility, fermentation reactions, indol formation and their action on gelatine and litmus milk. The majority of the organisms came under ten groups, the remainder only being found once. The type corresponding to *Bacillus coli* was found in 20, *Bacillus acidilactici* (Huppe) in 16 and *Bacillus lactis aerogenes* in 7.

One is struck by the diversity in the organisms infecting the urine but when it is realized that in

infection is caused in some instances by contamination with fecal matter it is more easily understood.

The great variation in organisms also explains the unsatisfactory results in vaccine treatment for chronic infections of the urinary tract if stock vaccines are employed. Vaccines were prepared in all cases and used with satisfactory results in the great majority of cases.

In treatment the author lays great stress upon the beneficial effect of autogenous vaccines and also the use of alkalies in the early acute stage of the infection and later the use of hexamine compounds with the production of acid urine.

Experiments have demonstrated that the antiseptic power of hexamine in alkaline or neutral urines is almost nil and that the antiseptic power rises rapidly as the acidity increases.

The degree of acidity in terms of total solids in the urine is obtained by taking the amount in cubic centimeters of decinormal soda required to neutralize 100 ccm. of urine and dividing it by the number beyond a thousand in the specific gravity of the specimen and multiplying by twenty. The urine is diluted ten times with distilled water before titration and phenolphthalein is used as the indicator.

It is important to keep the acidity of the urine high above four or five or the hexamine will not act efficiently, a high acidity being of more importance than a large dose of hexamine.

V. D. LESPINASSE

BLADDER URETHRA AND PENIS

Walther, H. W. E. Calculus Impacted in a Vesical Diverticulum Removed by High Frequency Cauterization. *J. Urol.* 1918 11 325

The relative infrequency with which cases of calculus impacted within a vesical diverticulum are encountered and the simple means of high frequency cauterization by which such stones can be removed has prompted Walther to report this case.

The patient was a farmer, seventy nine years of age, who ten years previously had been operated upon for an urethral stricture and an hypertrophy of the prostate, suprapubic prostatectomy and external urethrotomy having been performed at that time. Since then the patient had been in fair health up to a year ago when he noticed that urinary frequency had developed both diurnal and nocturnal.

Under local anesthesia cystoscopy was performed and upon the right lateral wall of the bladder was seen a small white mass adherent to the vesical wall and about the size of a pea, by means of an ureteral catheter pushed up against the mass it was found to be solid. A Bugbee high frequency cautery electrode was then introduced and an Oudin spark current applied to the mass. A diagnosis of calculus was then made. The spark was then applied to the neck of the diverticulum and the electrode tip was deliberately pushed into the

mucosa. Multiple areas were so treated and by using a wide spark gap marked penetration was obtained.

Two days later a second cystoscopy with an operating cystoscope was made and on the right lateral wall where the calculus was first seen the diverticulum was found in a collapsed state with a sloughing edge. On the trigone a dumb bell shaped stone was seen lying free in the bladder which was grasped with a pair of Buerger forceps and easily removed.

In his conclusions the author states the interesting feature of the case is the curious shape of the calculus and the fact that the greater part of the stone coincided with the esophageal diverticulum.

Cathelin F Aut plast c Meti od Applicabl to
the Treatment of U ethral F tulae Foll ng
War Wounds (Pr d t pl t q ppli bl
u t t m t d f n t l de l t ut d
bl s de g rre) J d l P o 8 6

Cathelin reported that she presented at the third conference of the Directors of the French Universities in Centers in October.

Altogether 941 and 1 the g i t u r r y g i
ha e b e n o b s e r v e d l u l i n g t e t l i n k
urethral i t u l a e The penile ureth r i j l i n
18 the crotal ureth a i n 5 the f i n e l i c t l n
o a n d t h e d e e p r e t h r i n

Generally peak g in al ut ne t l d i the e
p t e t the ex e r c e f g t l f t o n
ch cked

As ega d the r ute f the p je tile n 3 e
the right th h as st u k in 34 the leit thugh n
both th hs Tle anterior face nd d n
case th p steri r face n and the t r f e
in 20 Alm t e ry und f the e t ilgn t
urinary region accompanied by a on t t
injury of the thigh or f the pel

Cathelin gives elaborat d t l of the tr at rent
of n t l x and f th utopia t r t r t i e
method employ d The a e q t a f
ope at e d t l hich t is nece v t h in
o der th o may ltun s c c n a n i um
of time

The treatment further helped by the method of cutaneous incision (penetration) through the bipolar electrode. The deal of tumour tissue of the urethral canal can be applied in the first three months after the operation. There is a real loss of substance of the urethral canal. Moreover, the method is applicable to all kinds of canalicular surgery. The operation is almost always successful and the patients live in the state of health. The author considers this method one of the greatest progresses of the urology.

He gives detail of the treatment of complicated fistulae including the use of the complete set of the glans penis of which type he shows to the class. He points out that autoplasmic penile and urethral surgery is a delicate patient and lengthy procedure long interval must elapse between the successive

operations. The final results are most gratifying since all or almost all cases have recovered with preservation of functions.

The conclusions of the conference after Cathelin's report and a discussion upon it were to the effect that there was no single method of treating urethral fistula. If the method of cutaneous inversion gave good results especially in small fistulae the different redoubting method and autoplasmic strips or mucous transplantations ought not to be forgotten especially in cases where there is large destruction of the urethral wall.

In primary operations of urgency in the genital region excisions should be as sparing as possible because every particle of skin is of use in late reconstructive operations. W. A. BRENNAN

Schmidt L E Operative Treatment of Uthral
Fistula Sg Cl Cl cago 08 8

This method has given satisfactory results in practice.

It consists of a linear incision extending well on either side of the fistula with a circular incision around the fistulous opening. Above and below the fistula the inflammatory tissue is thoroughly dissected out. The perianal tissue is all the inflammatory tissue removed up to the urethral mucosa. In this connection the author emphasizes the importance of the point that the incision must be done with complete care at the point so as not to enter the fistulous tract and injure the mucosa. If the dissection is performed at the avulsion easily carried out it remains undisturbed and the inverted edges remain intact throughout the incision without pressure or suturing. In the absence of a contact of the surfaces depends on the length of the fistulous tract. Two superficial incisions at the distal end of the point between the incision have been carried out. After that the fascia is well sutured to the skin brought together; the abdominal wall is sutured with silk or horse hair suture.

In all instances at the same sitting the author performed a term laryngotomy and inserted a drainage cannula into the trachea. The operation for urethral stricture was performed in order to keep the urethra free for urine passing over the area and also to facilitate catheterization in case retention should set in and also to avoid the irritation of the permanent catheter. At the time of operation the urethra was exposed with mandril introduced into the urethra as to permit of more careful dissection. After the incision and closing of the wound a thick iodoforn gauze is placed in the urethra beyond the point of operation so that it will appear at the external urethral orifice through the urethroscope tube. The work allowed to remain in place for forty-eight to seventy-two hours. The drainage was removed in six to seven days.

For illustrations of the various steps of the operation the reader is referred to the original article.

THEO D 0200 172

Michel L L Painless Meatotomy *A J M J*
1918 cviii 461

Michel claims that a successful meatotomy is not so much dependent upon the size of the external incision as upon the division of the membranous band or collar back of the fossa navicularis at its junction with the urethra proper

The operation is performed painlessly in the following manner The urethra is distended with one quarter per cent cocaine solution which is held for three minutes A cotton applicator is soaked in the cocaine solution and introduced into the urethra for about one inch A very fine hypodermic needle is then introduced under the integument in the median raphe at the margin of the glans and the frenum and infiltration with the cocaine solution is made up to the very edge of the meatus The cotton applicator is removed and the constriction or band is first severed then the glans is incised through the infiltrated area Bleeding is controlled by placing a pledget of cotton well oiled with vaseline within the urethra

LOUIS GROSS

GENITAL ORGANS

Bland M E The Surgical Treatment of Gonorrhoeal Epididymitis *J Urol* 1918 ii 321

Bland describes his method of operative procedure and his results in 14 cases and says that it is difficult to understand the conservatism prevalent in cases as acute as gonorrhoeal epididymitis as it contradicts all modern surgical principles

He makes an incision about one half an inch in length through the scrotal wall and tunica vaginalis immediately over the most swollen area and permits the serous or purulent exudate to escape If serous in character the incision is closed with one silk worm gut suture one or two strands being left for drainage which is removed in twenty four hours If pus is present the incision is packed with a small strip of plain gauze and the wound allowed to granulate Either a local anaesthetic or gas is used

Immediate relief is obtained the patient is able to resume his duties in a few days and shortly thereafter to submit to treatment for his urethritis

In the author's 14 cases the average stay in the hospital was 5 days and the average number of days before the patient was able to resume his duties was 4 26

LOUIS GROSS

Millstone H J Seminal Vesiculography *Wisconsin M J* 1918 xi 146

The vesiculogram Millstone claims gives very detailed information as to the capacity and internal conformation and also as to the detection of foreign bodies kinks and strictures It also shows obliteration of the ejaculatory ducts and differentiates between a foreign body in the vesicle ureteral stone and calcified iliac lymph glands

The author admits the possibility of sterilization but with precaution as to infection trauma and hæmorrhage the danger is nil He suggests its

employment only where there are definite indications

The patient is given a brisk cathartic the night before and an enema the morning following The scrotum is surgically prepared the vas is opened the needle introduced and ten per cent collargol previously warmed is slowly injected until the patient complains of colic like pains in the base of the bladder The rectum and bladder are both inflated with air and by applying pressure over the suprapubic region by an ordinary abdominal binder the picture will stand out clearly

LOUIS GROSS

Merritt E P Some Aspects of Prostatic Surgery with Special Reference to Methods of Popular Choice Pre and Postoperative Treatment *J So Car M Ass* 1918 xiv 224

The literature on surgery of the prostate the mortality tables from different sources and the different methods are reviewed

Martin gives a very interesting description of 110 patients operated upon 55 perineally and 55 suprapubically with the end results and after careful consideration of each he is in great favor of the suprapubic route as the complications from the perineal were much greater and there are more avenues for postoperative complications

It is interesting to note the primary mortality as given by Simons (1) by the suprapubic method Walker in 112 cases 5 per cent Freyer in 1000 cases 5 5 per cent first 100 case 10 per cent last 100 cases 3 per cent (2) by the perineal method Young in 450 cases 3 7 per cent Watson 6 per cent Proust 5 8 per cent Leguen in 106 collected cases 8 0 per cent Judd 5 3 per cent

The author after personal operative experience and careful analysis of the subject believes that the two stage operation is advisable in the majority of cases on account of end results and the good condition of patients while convalescing

The preoperative treatment should consist of estimating the kidney functioning power through intravenous injection of indigocarmine or phenolphthalein increasing the urea and other solids of the urine This is accomplished by proper diet water in quantities rest stimulation of the secretory glands especially the bowels and alkaline medication

The first stage of the operation comes under this head also It consists of a simple suprapubic cystotomy allowed to remain open causing free drainage relieving back pressure on the kidneys and clearing up distressing bladder symptoms In the opinion of the author an autogenous vaccination is accomplished by the gradual absorption of bladder contents into the raw surfaces of the wound The time usually taken between the two operations in a majority of cases is ten to fifteen days

The important postoperative conditions are uræmia heart conditions hæmorrhage shock etc Uræmia can be avoided by small doses of calomel along with diuretic and plenty of water

Packing coagulum and horse serum have topped some severe hemorrhage.

For shock glucose enemata to be retained with sodium bicarbonate Fisher's solution and intravenously stimulants strychnine branly etc are used.

THEODORE DODD

Louis G. Tunneling of the Prostate in the Treatment of Hypertrophied Prostate (Jefferson Medical College, Philadelphia)

Louis has already demonstrated that it is possible to tunnel the prostate in the following manner: The method by which this is accomplished is called tunneling the prostate. It has a double purpose: (1) destruction of the prostatic barrier between the bladder neck and the posterior urethra; (2) the tunneling of the prostatic bladder neck having been performed the result is that

The operative technique of cutting a trench through the prostatic barrier and bringing through the hypertrophied prostatic bladder neck the urethra was described by Louis Harrison. When both have been completed the urethra is easily and the bladder completely emptied.

The method finds its indications in the considerable number of cases in which the prostate is not very large. In such cases the extent of the minimum prostaticotomy is just proportionate to the symptoms. In addition to the fact that the results are not at all quite satisfactory even in the hands of the best operators.

Tunneling is not dangerous. It requires neither general anesthesia nor hospitalization and may be carried out on patients with renal deficiency who cannot undergo a major surgical procedure. Its results are not only immediate but lasting. One of the author's patients operated upon more than four years ago continues to be well and there has never been any recurrence of retention.

Up to the present the author has demonstrated the tunneling operation in 8 of the 10 cases. The result is quite satisfactory and lasting. With this there is the opinion that this method of treatment offers a new route which will be quite acceptable to patients because it does not necessitate confinement during at least six weeks in a hospital and it removes the risk of a severe surgical operation.

W. A. BRENNAN

Bigg W. T. P. Statistical Analysis of 98 Cases

The author has chosen the term prostatism rather than the commoner one of prostatic hypertrophy because it is comprehensive. It calls to mind a rather characteristic group of symptoms and at the same time suggests all the pathological changes prone to occur in the bladder and glands in late middle life and old age nor does it ignore that peculiar and poorly understood nervous disturbance in the bladder and at the vesical neck which is

associated more or less with practically every type of prostatic disease.

The author lays great stress upon using the indwelling catheter in cases of acute prostatic congestion of urine that are desperate cases too severe even for suprapubic cystostomy. He reports a series of 2 cases. Of these 22 cases 21 were married and only one was a negro. Every physician knows that negroes seldom suffer from prostatism and that the disease is commoner in married than in single men. Both of these facts are opposed to sexual excess as an etiological factor.

The oldest patient was eighty-two the youngest fifty. Neither of the cases had an operation. The average age was sixty-six years. The average age at which symptoms had commenced was seventy-two. In one case that of the youngest patient symptoms had been present for only a few weeks while in several frequent urination especially at night had been present for at least ten years.

If the symptoms were noticeable at sixty-two it means that changes had occurred in the prostate and bladder muscles even earlier for the bladder at that struggles successfully against the obstruction. This is known because cystoscopic examinations for their conditions when there are absolutely no symptom referable to the prostate and no urethral stricture often show enlarged gland and markedly trabeculated bladder.

Ten of the cases never had used alcohol and only two gave a history of alcoholic excess. Several were steady but moderate drinkers.

Ten gave a history of previous neisserian infection and statistics of larger groups show about the same percentage. Infection in the prostate may as some believe be the cause of pathological changes. It is true microscopic sections show a round cell infiltration on such as seen in chronic infections elsewhere but in these cases that have never had any previous disease of the urethra or prostate who have never had instrumentation of any kind it seems more reasonable to consider the infection an effect rather than a cause of the prostatism.

Polyuria especially of the nocturnal type was of course the most common symptom. It was present unless temporarily masked by an acute retention in every case except two. In many of the cases it was associated with dysuria urgency and even incontinence. A few of the patients had to strain out a few drops of urine every ten or fifteen minutes while others could rest at times for two or three hours. This frequency of urination often dated from the first complete retention on.

Eleven cases had complete retention when first seen and in the other the residual varied from 2 to 25 ounces. In one case seven years had passed since the first retention and yet frequency was not marked nor the general condition bad.

Only four of the cases gave a history of hæmaturia and in none of the four cancer cases was it a symptom. This is in accord with the statistics of larger groups which show that hæmaturia is commoner with

simple hypertrophy than with carcinoma of the gland

Sciatic pain was present in three cases and in two of the three the condition was malignant. Pain in the kidney region along the ureters and over the scrotum perineal and testicular pain were occasional symptoms and in four cases the systemic symptoms were those of a mild uræmia.

Urinalysis usually gave the following: low specific gravity the average for the 32 cases was 1.013, albumin one or two plus, reaction acid or neutral, urea 0.5 to 1 per cent, red blood cells negative or one or two plus, pus cells from one to four plus. In a few cases the urine was practically normal except for pus cells which were present in every case except two. In these two cases records of the first urinalysis show pus cells were negative and yet both of these patients had catheterized themselves without any aseptic precautions from two to six times daily for several weeks.

There were nine cases which had not had an operation. Two cases were refused operation because the condition was diagnosed as carcinoma. Both were advised to take the radium treatment. One refused and his physician reports that he is now bedridden and oedematous below the waist. He keeps a catheter fastened in the bladder continuously. When the author saw him last September he was oedematous only in the left thigh which was attributed to interference with venous return through the left internal iliac vein. Operation seemed a hopeless undertaking because the gland was so hard and the extension so great.

The other case commenced the radium treatment in October 1917. He spent several months in Baltimore where he improved enough to have a perineal operation. He voids naturally now though he had worn a catheter continuously for nine months previous to the radium treatment. However he is now rapidly losing all he gained is suffering much pain and cannot move his right leg and thigh. In all probability he has a metastasis of the right hip.

In cancer of the prostate radium probably offers more than surgery but even radium cannot do much when the carcinomatous process is extensive. When this case was first examined by rectum and cystos-

copically the carcinoma was not extensive but it was so reported five months later.

In using the phthalein test the output of the first hour should always exceed that of the second hour. This shows a reserve in the kidneys.

Except in malignant cases and certain types of obstruction due to contracture of the vesical neck, prostaticism should be relieved by prostatectomy. Formerly the high mortality might have been an excuse for palliative treatment and operations of doubtful efficiency today when the mortality is very low considering the age and the usual condition of these patients there is no excuse for refusing operation to any patient whom it promises to benefit.

The present low mortality is due somewhat to improved operative technique but much more to improvement in pre and postoperative treatment.

The phthalein test is an invaluable aid in determining the length of the pre operative treatment and the advisability of the one or two stage operation.

In cancer of the prostate radium probably offers more than surgery but just how much it offers no one really knows. If circumstances are such that radium cannot be used if catheterization is difficult or impossible then prostatectomy or simple drainage should be performed with everything in favor of simple drainage.

Finally the end results are such that one should hesitate before advising the catheter for a condition that demands the knife.

V. D. LESPINASSE

Sainz de Aja. Section of the Frenum in Circumcision and in Frenulum Brevis (La sección del frenillo en la circuncisión y en el frenulum brevis). *Med. Ibera* Madrid 1918 iv 269.

The author says that the frenum fulfills important functions during coitus by rectifying the shape of the glans and contracting the meatus thus giving proper direction and impulsive force to the stream of semen so that it may reach its proper destination. For these reasons when circumcision is done in an individual with a normal frenum this latter ought to be absolutely respected. When the frenum is abnormal or when its section is necessary care should be taken in suturing that the proper normal degree of tension is preserved.

W. A. BRENNAN

SURGERY OF THE EYE AND EAR

EYE

Blasko C. S. L. on The Operation Treatment of Traumatic Coloboma of the Lid. *J. Ophth.* 9 8 1 4 4

The most frequent war injury to the eyelid is coloboma reaching the oculi in the cicatricial stage. While the injuries occur in peace times they are so uncommon that no typical operation has been developed. The principle for the reconstruction of the eyelid is remained unchanged and consists in reproduction of the condition which was present directly after the injury and then utilizing the wound in such a way that the lid returns as far as possible to its normal position. This cannot always be done, as there are often defects which must be replaced by fresh tissue.

The cases generally follow two varieties. In the first the eyelid is torn away from the canthus usually the inner one. A scar runs downward from the angle and the lid is anchored in an ectropionated position. To correct this the lid is fastened to the canthus in a way which can be described as hanging the lid upon a small flap or spur. The steps of the operation are as follows: (1) The scar is utilized by two incisions joined at the extremes. After thoroughly excising the scar tissue as well as the lateral strands the lid is free. (2) At the inner margin of the wound a flap is formed with its base at the level of the angle of the lids. (3) At the temporal margin of the wound just below the margin of the lid a straight incision is made into the skin. This small incision gapes in the form of a triangle and serves to receive the little flap which has been described in (1). (4) The wound edges are accurately united the spurlike flap fitting smoothly in the triangular gaping wound just described and becoming a part of the skin of the lid.

In the second class the margin of the lid has suffered trauma in its middle part and there are cicatricial areas with ectropion. (1) The first incision is made about one cm. below and parallel with the margin of the lid and throughout the whole length of the lid. (2) The scar is then circumscissured with two incisions, each one vertical to the margin of the lid. (3) The scar is thoroughly dissected and its lateral expansions are excised. (4) The margins of the coloboma are then sutured, correcting the ectropion and forming a semilunar raw surface underneath the flaps. (5) To cover this wound surface another curved incision is made running from the lower margin toward the temple beginning 1/2 to 1 cm. to the outer side of the inner canthus within the lower extremity considerably farther out than the outer canthus. (6) After detaching this flap a 1/2 cm. triangular piece of skin and subcutaneous fat

base up is excised from its lower margin. (7) The columns of this triangle are first united, thereby displacing the flap toward the nose and covering the defect the flap being then sutured. The steps are shown by five illustrations. S. S. HOWE

Curtin T. H. Surgical Treatment of Retinal Detachment. *Mem. J. S. G.* 9 8 177

The author introduces this article with the following statement: "The treatment of retinal detachment is probably the most discouraging of all conditions which the ophthalmologist meets in his practice. Much of this is due to the perfunctory treatment which is given to the majority of these cases."

Curtin is given Vail of Cincinnati for a paper in which a report is made in the *Annals of Ophthalmology* 1913 based upon replies received from 81 oculists. 50 of the oculists had an experience of twenty years or more and averaging five cases a year or about 25,000 cases in all with the employment of electrolysis as a line of treatment and not a single case of permanent cure in the lid. However, 31 oculists did secure cures. Curtin reported that 23 each had a single cure, 4 secured two cures and four cures making in all 41 patients reported as having been cured. Two of these had albuminuria of pregnancy as the etiological cause and the eye withdrawn from the number leave 39 cures. In half of these the cure reported is not convincing from the record submitted leaving twenty cases or less than one in every 100 cases as a possible cure. From these figures Vail led to the conclusion that there is no proper treatment for this condition.

Medical treatment in olive retinobulbar punctions subconjunctival injections of citrate of soda or other drugs is line of treatment. The author advises that a search be made for the causative factor. He believes that aside from general treatment surgery offers the best hope in the line of treatment which should have for its aim the removal of the subretinal fluid and the adhesion of the area of detachment to the choroid.

Reference made to the previous work of James Ware in 1805 and von Graefe in 1863 to the employment of the galvanocautery in 1882 by de Wecker and Melon and to the use of irritant fluid as practiced by Fano and Schole. The latter using iodine injected into the posterior chamber. In 1895 Deutschmann proposed his method of operation.

Holth at the meeting of the Ophthalmological Society in 1903 reported six cases of retinal detachment in which the vitreous was trephined without evacuating the subretinal fluid. He reported a temporary favorable effect in all and a permanent effect in four of the cases. Holth gives credit for the

operation to Argyll Robertson in 1874 but it was done at that time for glaucoma absolutum. Holth used a two and one half millimeter trephine raised a flap of conjunctiva and episcleral tissue after which a scleral button was removed and the flap sutured into place without injuring the choroid.

Parlier reported a successful case. He trephined the sclera and incised the choroid and retina. Later he reported eleven cases before the June meeting of the American Medical Association with three good results. The incision into the choroid and retina is made with a cataract knife allowing a few drops of vitreous to escape.

The author collaborated with Thomson in a series of cases covering a period of five years. Usual medical treatment was employed together with a technique practically the same as Holth's as far as the removal of the scleral button is concerned. No enlargement is made of the scleral opening as Holth considers proper at certain times. This is done to avoid any inflammatory process that might cause a later blocking before the usual time for closure of the wound. Aspiration is done if there is but a small amount of suprachoroidal fluid that escapes. If it is decided to aspirate this is done by carefully pushing the needle of an aspirating syringe through the choroid and aspirating as much fluid as is possible. If no aspiration is done at the time of the operation then a period of ten days is allowed to elapse before an aspiration is attempted. This operation can be repeated if necessary as it is reported that there is no attendant reaction.

It is advised that the trephine opening be made over the site of the detachment and as far back as possible on the globe. Most detachments are found in the lower field. Also it is suggested that the scleral opening be made over the most dependent portion of the detachment on account of gravity. The technique of the operation as done by them is given and it is urged that this procedure be resorted to early in order to be successful for the reason that the parts have undergone such pathological changes as to render their reattachment impossible. No hope of cure is given in cases of high myopia. The indication for the operation is especially recommended in recent traumatic or spontaneous detachments where the fluid accumulation alone seems to continue the detachment.

A series of 10 patients are reported as having been operated upon by the method reported. Most of them were suffering from a long standing and nearly complete detachment and no result was expected. Some gave early promise of cure only to re detach later. No eyes had to be enucleated because of the operation. Six patients are regarded as cured having given evidence of the fulfillment of these three requirements: (1) complete reattachment (2) restoration of vision and fields (3) a duration of cure of one year.

The author concludes with the words of Roemer. The treatment of detachment of the retina is one of the most thankless and unsatisfactory duties we have

to perform in ophthalmology. It is his belief that from the statistics of Vail the results obtained by this method of scleral trephining with aspiration show an increase in good results over the older methods. It is reported that with good technique there is no danger to the eyeball itself and in none of the cases was vision lowered hence the operation is urged upon the profession especially where one has small or moderate detachments that are found early and when all the subretinal fluid can be removed. It is also urged that a greater study be made of the etiology and the proper medical treatment that should be instituted in conjunction with the operation. J S CLARK

Gifford H. The Treatment of Blood Cysts of the Orbit. *Am J Ophth* 918 1 625

The author reports three cases of this condition and states that in every case of deep seated orbital tumor of uncertain nature the possibility of its being a blood cyst or some other benign cyst should be considered. If operation is done the tumor on being exposed should be secured by passing a thread through it and its nature should be tested by a puncture. If it proves to be a cyst thorough cauterization with phenol or something similar in effect should be tried before an attempt is made to extirpate it. OTTO M. RORT

Uhlenhuth E. The Influence of Function upon the Structure of the Eye. *Arch Ophth* 1918 XLVII 401

If an eye of a larva of the European fire salamander is severed from the optic center and is grafted with a flap of surrounding skin to another larva of the same species the retina of the grafted eye first undergoes a more or less severe degeneration but after a short time begins to regenerate and the normal condition of the retina may be reestablished completely.

However completely the structures of the grafted eye may be restored these eyes are unfit to function since no stimuli can be transmitted to the brain and it is clear that the opinion of many anatomists and surgeons i.e. that the structures of an organ cannot regenerate without the organ being in active function is erroneous. Eyes preserved three and a half years after being grafted show all the functional elements of the retina present.

Further this regeneration occurs if the functional stimulus i.e. any trace of light is prevented from reaching the grafted eyes.

Since the grafted eyes are severed from the nerve centers the experiments also prove that a trophic stimulus exerted by the nerve centers upon the tissues is not an essential factor in the regeneration and maintenance of the functional structures of the eye.

Degeneration and regeneration are matters of nutrition and are dependent on the re establishment of circulation.

The phenomena exhibited by the cells of the

pigment epithelium are such as are known to occur in retinitis pigmentosa and the conclusion drawn from the facts presented are that retinitis pigmentosa follows degeneration of the retina and that it is a defensive mechanism against the disturbance the migrating pigment epithelial cells tending to remove the products of degeneration by their phagocytic action. In no case was there ever observed a migration of the pigment epithelial cells except when freed from the adjoining layer of the retina either by degeneration or detachment of the retina. S S How

Viner G A Case of Hyaline Bodies on the Optic Disk. *B I J Ophthalmology* 98 46

The description given is that of a lobulated mass irregular in outline semi-translucent and gelatinous appearance bluish white in color. This mass hiding the optic disk consist of innumerable but discrete round hyaline bodies lying in front of the disk and retinal vessels. The latter are for the most part buried in the mass emerging near its edge and are with two exceptions healthy in appearance. Near the upper edge the vessels are two small and very tortuous dilated veins coursing over the upper quarter of the surface. Two small arterial branches running from beneath the mass toward the macula present the signs of perivasculitis. There are no newly formed vessels present and no other signs of any previous inflammatory changes in the eye. The high plus lenses which focus the surface of the mass. 3 D

O T M R O T

EAR

Hasting H Reactions of the Normal Labyrinth. *Recent Experience in the United States. A Collection of Examinations. Annals of Otology, Rhinology and Laryngology* 98 48

The author has made the following observations in testing over 800 applicants.

Spontaneous nystagmus was not once found. The average duration of after nystagmus from turning in 28 applicants was 3.49 seconds after right rotation and 2.7 seconds after left rotation. 15 to 35 being the extremes in about 99 per cent of the applicants examined.

The average difference in seconds in after nystagmus from right rotation and left rotation was .8 seconds in 200 cases studied. In only of the 200 cases was there a difference of 10 seconds and in no case more than 10 seconds between the right and left rotation after nystagmus.

3 Spontaneous past pointing was not found. 4 The past pointing reaction after turning was elicited according to rule in about 90 per cent of those examined. The average number of times of past pointing in 283 cases was as follows: right arm 2 left arm 1.91 (after right turning). Right arm 2.18 left arm 1.96 (after left turning).

Of 700 applicants 47 crossed pointing with one or both arms on turning for past pointing as follows on right turning 5 crossed with the right arm 26 with the left arm on left turning 18 crossed with the right arm 21 with the left arm. The right arm crossed 3 times as compared to 47 with the left arm. This fact the author explains by stating that there is in right handed men a better control over the right arm than the left arm and during the loss of equilibrium that is extreme in a certain proportion of those turned there was a greater loss of control over the left than the right arm. The fact that only 5 of the 47 crossed pointing with the right arm on right turning explained in that for the right arm the cross point on right turning there is interference because of the large muscular development of the chest in right handed men.

The following conclusions are offered: (a) In turning for past pointing allowance must be made in some individuals for the extreme loss of equilibrium that results in which case the cross pointing is not an evidence of disease but possibly a hypersensitive condition of the end organ in the labyrinth. (b) in all cross pointing the left arm is more likely to cross point than the right.

5 The fall g reaction was found to be abnormal only 1 time in 37 times on right turning and 10 times in 250 times on left turning.

In conclusion the author reports a few cases where abnormal reactions occurred in men apparently normal in every respect. The author does not attempt to explain them. Otto M Rott

Howley B M Facial Paralysis in Ear Disease. *J M S V J* 98 7

Three cases of facial paralysis in acute ear disease are reported. The diagnosis in the first case was acute otitis media with Bell's palsy. In the second case a facial paralysis occurred the day after a simple mastoidectomy for acute mastoiditis and the diagnosis was a facial paralysis from pressure due to postoperative hemorrhage. The third case was one of facial paralysis due to pressure of the exudate from acute otitis media and mass to distend before operation. Otto M Rott

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Hollis W A Epidemic Streptococcus Infection of the Nose and Throat Clinically Considered
J Indiana St M 1ss 1918 xi 327

The author draws attention to the various clinical manifestations of a streptococcus infection of the nose and throat

In the case of sore throat due to this organism there may be red patches with or without exudate the tonsils may or may not be involved in fact some of the worst cases have occurred in patients whose tonsils had been previously removed The exudate may resemble that found in diphtheria and then only a bacteriological examination will reveal the true nature but in such cases antitoxin should be administered as a precaution while awaiting the bacteriological report In streptococcal infections the systemic manifestations are usually out of all proportion to the local

The author draws attention also to the sudden onset and termination of this infection excluding of course the complications but there also is no infection more insidious and none that can undermine the system so thoroughly

As compared with staphylococcus infections the suppurations due to streptococci are much more destructive and more rapidly spreading There is more local destruction and more liability toward generalized infection and septicæmia in this type of infection

Concerning the clinical manifestations in the mastoid the author quotes Andrews description of three of the principal infections (1) when the mastoid is full of granulations—pneumococci (2) when the mastoid is full of pus and there is a sharp outline between diseased and healthy tissue and cells are destroyed—staphylococci (3) when there is marked destruction of tissue and the constitutional symptoms are out of all proportion to the mastoid symptoms—streptococci

Diseases and conditions which will produce and predispose to sinus complications are diphtheria erysipelas influenza scarlet fever measles small pox tuberculosis typhoid fever syphilis hyper trophies and hyperplasias of the nasal mucosa close approximation of the middle turbinate to the lateral wall and septal deformities

For dyspnoea due to swelling of tonsillar peritonsillar and glandular tissue the author advises dissection of the anterior pillar free from the tonsillar capsule This condition is to be differentiated from quinsy by the fact that in quinsy the mouth cannot be opened with ease while in this condition of dyspnoea due to swelling the mouth can be easily opened

Orto M I Orr

THROAT

Theisen C F Further Observations on the Radical Treatment of Peritonsillar Abscess
Ann Otol Rhinol & Laryngol 1918 xxvii 600

The author states

1 The radical method of treatment for the quick relief of distressing symptoms was used in 36 selected cases in 20 of which the part of the tonsil that had been loosened by the dissection in reaching the pus was removed at the time In 16 cases a complete tonsillectomy was immediately performed after the pus was evacuated

The operation is performed as early as possible usually within two or three days after the onset of the attack and in selected cases In cases in which there is so much œdema of the parts that the anatomic landmarks cannot be easily determined the radical method was not attempted

3 In this type of case the inability to separate the teeth is usually so great that the radical operation would be very difficult Local anesthesia because of the possibility of the aspiration of pus under general anesthesia is always used except in young children

4 The risk of a spread of the infection is slight and has never been experienced by the author There is no reason why a complete tonsillectomy should not be performed in every suitable case at the time the abscess cavity is opened

5 No unfavorable symptoms occurred when both tonsils were operated upon As a matter of fact the pain in swallowing after the operation does not last much longer and the case runs about the same postoperative course as when the tonsils are removed under normal conditions

Orto M Orr

McCoy J Surgical Treatment of Cancer of the Larynx with Report of a Case
N Y St J Med 1918 xviii 363

The author prefaces his article with the following statements

1 Laryngectomy can be accomplished with as little reaction as the removal of a tumor from the arm or leg

2 This is accomplished by insisting upon (a) thorough sterilization of the mouth and nasal cavities along with other sterilization and preparation and (b) anesthesia directed away from the lung that is local or colonic ether anesthesia the author prefers the latter

After describing the lymphatics of the larynx and the various locations of cancerous growths the author mentions the surgical procedures adopted for removing them together with a description of his surgical technique ending with a report of six

cases one hemilaryngectomy to total laryngectomies with partial resection of the esophagus and the total laryngectomies O o M Ro

MOUTH

Kazanjan V H and Bu o s H T ment of Gunshot Wounds of the Face Accompanied by Extensive Destruction of the Lower Lip and Mandible B t J S g 9 8 74

Kazanjan and Burro describe the treatment of gunshot wounds of the face accompanied by extensive destruction of the lower lip and mandible under three headings (1) early treatment (2) reconstruction of mandible function (3) restoration of the lower lip and chin

In the early treatment of these cases the first consideration is preserving the patient's life. Certain special dangers are not then the cases which require attention. The first step is to repair the wound on the second and principle consideration is the body of the mandible. The first step is to secure both of the anterior attachment of the mandible of the elements of the larynx with a культ that when the patient is in a supine position the glottis becomes obstructed. The first treatment is to raise the patient into a sitting position with the head well forward. If this fails to bring relief a tracheotomy must be done. Although the patient is an infected wound of the mouth the inhalation of septic material through the passages with consequent laryngitis is not.

Aside from the urgent complications such as that of surgical infection, edema, and the lips will be small and will be limited to the small of distal fragments of bone teeth and a little late healing the union is not likely to be complete. A little later a second operation may be necessary.

The wound is left widely open. The dressings are frequently changed at each time the patient is syringed out with antiseptic solution. Food is administered through a nasal tube. When the wound is possible a small cellophane tube is used.

In order to restore to the patient some power of mastication two distinct procedures are required. In the first place it must be insured at an early stage that the portions of the lower jaw which have survived shall remain in a position which will enable them to perform useful work. The second process is the provision of an artificial substitute for the missing portion of the jaw.

In the first place temporary splints are adjusted as soon as local conditions are sufficiently favorable. Two types of temporary splints are made. (1) If there are teeth extending on both sides of the jaw metal bands are fastened to them and the bands are connected by a heavy arch which carries a T piece in the middle. This arch holds the parts

of the jaw in proper position. A removable vulcanite splint is made to fit over the arch. (2) If no teeth are available for giving attachment to the splints a metal plate of suitable size is bent into shape. To the end of the plate moulding composition is added and the impression of the alveolar ridges is taken with properly occluded surfaces. The plate is removed from the mouth and after trimming off the surplus composition the model is reproduced in vulcanite rubber.

During this stage it is important to insure that a buccal furrow remains between the cheek and the remaining portions of the alveolus of the lower jaw.

Before proceeding to close the wound an artificial jaw is made of vulcanite and the patient wears this for a while in order to get accustomed to it before the plastic operation is done on the soft parts. This appliance is held in place by the remaining teeth if any are available or in the absence of teeth by the alveolar ridge of the lower jaw and by the occlusion of the upper teeth. It has sufficient bulk to replace the missing bony tissue and is made in three sections to facilitate removal, cleaning and readjustment in the mouth. After the plastic operations have been completed and the soft tissues have assumed their final form the appliance is made as a permanent denture.

In the plastic operation the flaps are taken from the cheek and the sides of the neck. To provide a lining for the deep pouch in which the artificial chin has to be a flap of skin is turned up from the front of the neck. To restore the pink margin to the lip is not so difficult as might be supposed. Usually one portion of the lower lip has survived and this can often be used for the lips can be attached to a remarkable extent and half a lip detached except at the end can be available for the whole width of the mouth.

The authors report four cases in all of which they used excellent results. The principal points to be remembered in the treatment are:

The preservation of the surviving portions of the mandible in the desired position.

The substitution of lost bony tissue by vulcanite appliance before the performance of plastic operations in the soft parts.

3. If stoppage of the mandibular operation until suppuration has ceased and the patient in good physical condition.

4. Use of a similar scheme of flaps in all cases. As to the efficiency of the jaw to masticate food a good patient's function was restored in the cases reported. A simple plan may be used to enable the patient to chew with greater force and satisfaction by changing him to press up the chin with the left thumb during each act of mastication. With practice the patient will develop the habit of mastication. An added benefit being helpful it is not unsightly.

C W Hocar

BIBLIOGRAPHY of CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

NOTE—The bold face figures in brackets at the right of a reference indicate the page of this issue on which an abstract of the article referred to may be found

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SURGERY OF THE HEAD AND NECK

Head

Cl f f h l h t l
L J B R V M d R R 9 8 59
I t l b I D f J d m d B l u
9 8 1 6
Hem m f th l A D B f v S Cl
Ch 9 8 7 3 f th v I I M B l l t [116]
m m S d l d P 9 8 1 4
Th p t t m t f t l l l k W [117]
SIA E A S g I h l o r l l i
I f th l l m n t f th m l f th
f th t th f t l t t t y
A P R c D t l C m 9 8 1 8 5
Ph m f t t f th l t l l
p f t g d f th h t l t l C t
a d P T R I K I S y H I S k 9 8
Th pe l t d l f t t l l
t f l f p l m d t t l t t l t
p g b l d f l m n l l M l l
9 8 1 300
T f th m t h h l t l [117]
Rh l t d g n l R l t l A O t l
d h l & L a y g l 9 8
P n t f m t d b l m y g t m y
d t l t t f l f t t m n
d S v H d S 9 8
A l k m l g t g th m d f m th h t
t m H T l l S M l l 9 8
L y n l 30
S m b t th d l d t f th
l v g l d d th l t D R M l T m
9 8 1 [117]
T m t f g u h t f t f th m l l J B
R s A S k Ph l 9 8 1 4
S m p e t t m l y t m l W B
B l e B t M J 9 8 4 3
Rec l l t f th l J J B B
A S r g Ph l 9 8 1 4 [118]
R p t p l l b t f f
J L I A U d H M B l l t m S d
h d e p 9 8 1 3 4 f [119]
h g h m f th l t l th h m
m t f th k l l d b l t l t d l
K H M J r d D R B l v A m J M S 9 8 t
460
Th b j t q l x f o c b l t m t m
A M A R d H I l v P m l P 9 8
5
I t l p e s W F H m C d M A
J 9 8 8 3
R g n d l t d th p l 9 8 6 9
C l l b l t m l t h g k l
C H I R I A m J M S 9 8 1 483
C l d d b y t p e r t c t l t P
C l d d m l B l 9 8 5
G p d m p h l t A J H v B t M J 9 8
46
M d l l m l J y n d t l l h a m t m
P d S m m d B S A 9 8 4 7
S y p h l t m m t f t l y h l d t h
I t f P A B l v A m J S y p l 9 8 7
W l n d p g e s l t l d e g t
I T L e M d C l N A m 9 8 45

S m f the br H M F r I E R d A G L L
N A M J 9 8 59
Ther l t f s h d l b d W I N E
D t l m d W e l c h r 9 8 1 1064
C b l l t m J M O n a r i d R F u r a s
S m a m l B u A 9 8 v 435
Th k c l m p o t c f th c b l l r u n y g l l
W J M o r e C l a g M J 9 8 1 2 6
A m d p t f th l f t p o s t b l
a t v J J A M M U L L I N U S N v M B l l 9 8
7
C l l l l f m l W A J N e s J A m
M A 9 8 1 65
H t l f th l g y o f s b d l h x m h e s
C B H Med R 9 8 60
H y p t f c b p l f l d t h p l l y t
f l l a l g t f th t l J g l a C L L A
B l l t m S m d l h o p l P 9 8 1 757
H t g f l l h p e t p h c p h y m g t
l t l t y p h l G B H s A m J S y p h
9 8 5
H y l h y l y l m f f d b u l g O M
C A l l l f a c d m d I m a 9 8 3
I m f th p t t y g l d t l q f p t
p l h l L M A R T H U R S u g l C h 9 8
60 [119]

Neck

Ch t t l l p t t t m t th
p e t f th c A H N e v I n t t M J
9 8 9 8
C l v k A D B A v S g C l
Ch 9 8 9 5
S k l l t r c l r b I S c l x
Ch l k d m B l k 9 8 75 [119]
A l f t l c t h v g m a A l R E v I
l l M d l 9 8 46
l t f th t h l l d c t B D I A R
l S M B l l 9 8 7 3
Th l b e t f th t l c t f th t h d
l l t th b l J M l J l h m o l k
l p Th l 9 8 93
N t t h p l t f l b l t t d p r o d
f th t l y r d g l d J M R o f f J Ph m l
& l p Th p 9 8
M l p l t t t f t l t h y r d d t h
l y m p l t t I L E a J M e d I h 9 8
[120]
S y N l l t t p l t t f th t h y r o d
t h k l k l L J M d l c h 9 8
N A l l t d y f s e s f l y p o t l y r d m c h l d
M B C A h l d t 9 8 5 7
l l m l p y h y p t c l d m W H B A r s
B t M S J 9 8 c l 558
l t h l v t t h e t h y d g l d W G o
J I t h l & B t f 9 8 23
S t k g f l g l t h y d f t p e l c p e r t
G l S r A m J O b t N A 9 8 1 6 7
T l t h m g t F H R E z N A
M J 9 8 45
I p m t l l t h l s y m p t h t c g
l t t p h t h l m g t I B W i n s A m
J M S 9 8 1 553
K p o t f t t c o f e p h t h m g t r
F I s v C h a l t t M J 9 8 l c 5

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Pi r ynx and Œsophagus

For ign œsopha l b dy th pef rat n f am d s
 tun l t yatt j n t n tht ort ca h C M ssa
 P l l R m 9 8 e ch 3

Con de t n f hyste l spa m f th œsophagus
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 539
 Œs ph g l t r c t r e J B W r t r Chal t t M J
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SURGLRY OF THE ABDOMLN

Abdominal Wall and P ritoneum

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 S g l p e t of ght bph al J B
 A S g Ih l o 8 l 3 1 [126]
 S bphr n b es ft p d j l t t II
 Lu r Ned l Tj d h C k 3 3 5
 S m d p t n f th g t l l m t T
 Puj l A h espa d e f d j t t M l d
 9 8 300 [126]
 S ph l t p e t n t f t f t f t
 l f th h M L r u B l A l t m é d
 Pa 9 8 l 9
 C g t l l i f t l d pl gm W A D
 S g Gvn & Obt 9 8 3 3 [127]
 V t l h d c t t t l th bd m l
 ll H l GRE N B t M J 9 8 3 [127]
 M t n d n t t l t d h A
 G o S m m d B A 9 8 3 3
 c S m pl op t n f d bl c l h
 D T W t r J r J M S A J 9 8
 34
 A e t g l t j y f M k l i t l m
 G T a r B t J S g 9 8 3 4

Gastro Int st n l Tract

Th th d test of g t f t g l C A L
 sum N d l Tj d h G k 9 8 704
 G tr n m C L M x Su c Cl Ch
 9 8 976
 S m t l my m f th t m a h R F r r s c e
 C B l f h A t 9 8 l 3
 T m f th bd m m l t n m l g t
 pl m C A C S m a m é d B A
 9 8 x 4
 G t d o d l l d h l p e d t D l
 a r d Ly h r 9 8 356 [127]
 S m p pl l l y g th g e y f g t l
 G CRAIG Med J A t h 9 8 8
 Th d l t f g t t s t m y n m
 pl t d t m h l C B o r o U p a R
 As m é d g t B A l 9 8 5 [128]
 Ulc f th t m h th l c t A D
 B VAN S g Cl Ch g 9 8 o
 A e f d t b y h e m t m F C LLART P g
 d l cl M d r d 9 8 S p p N 7
 The ympt m t g y f th d d e f th t m h
 f m the phys l g a l p e c t A E M l s Med J
 A t r l a 9 8 79
 P e n c of p h e t l k e b o d s th g a t r i all
 TER A S M l K A A A S i K T k y 9 8
 11 8
 A s t d y f th f m n t t r y p n Y M A S S K
 Toky 9 8 N o
 A n g n f th d f g a t y p h l J
 GUARDADO R g e n t d o b t y g n B o A s
 9 8 34

D fl f l t a t e g a t t d u e t c q u d y p h l
 P A v A n l d l t m o d d l n m d B o s
 A b f 3 f th roent l l p th l y of th
 t m h E J L E A T T R L l l n d M J 9 8 [128]
 3 7 H a r b a l l m l f m the stom ch f g l S
 M n r U g k f L e r C p e n h a g 9 8 l 3 4
 U t l g th f a l c f m l g m e t s d j u n e t g a t o
 f t t c p p o r t H C R O U S E A m J S u 9 8
 4 T a n e t d l m t y g l y c s a a f t r g t r
 l e t m y f p y l o r c t r i c t e o f u l c e r o u s o m P
 l e N B l l e t m m S c m é d d h o p P a r 9 8 b [129]
 D m t t o n o f a p e f c t d t c h q e f p o t
 l t t r t m y l f h l y t t m y E A
 A S C l C l g 9 8 9 9
 Th p e t t t m e t f t l p y l o c s t
 F l D t h m d W e h s c h 9 8 l 6 3
 B f p o r t f f t t h c o g e t l t t f th
 d d m p e t d a t h H M M C C L A S A W
 A l l e i t 9 18 x 533
 T l m d t t m t f g l l t o n d f l e c t e d
 d l l d b y d o d n l t b t n J C H E M M E T E R
 M d R 9 8 575 [129]
 I t t l b t r c t p o d d l y th a m a t u of
 th l m t t h e u r y b l d d W H B E R A
 S g P h i l a 9 8 l 4 9
 I m p l o m t o f p t t t e s t l o b t r u
 I l P B l m é d 9 8 251
 I t e s t l b t r t H A J O N o C l f S t J
 M d 9 8 464
 I t e s t l l u b y M e c k l d t c u l m P O
 B o l d A G C L L O S m a m é d B o A r 9 8
 v 4
 I n t e s t l l u t h u l a t m a l f d g s
 H A E K E D t h m d W e h n c h 9 8 l 8
 I n t e s t l c l u b y g a t o e s e c t f th
 l p A C M O L I N A S m a m é l B A 9 8
 93
 A d m f th m l l t t m f t t h r
 I t n l l J S M A n v B t M J 9 8 l 432 [130]
 P t l o r c m p l e n t c i t o n t l o g t
 f a t t d p o t p e t s e q l e f i l l g
 p p e d c t m y H A S N t h t M e d 9 8 u
 83
 Th g l t t m t f t t p t W H C
 R o v l P t t L d 9 8 c [130]
 I n t e s t l t l o c a l l c m p e t n y a d
 h o c a p p d t t g e l n c a l l y c d d J S
 D R A M O N D A M J 9 8 67
 I t p t u m t t l g t o P O B o l o
 S m m é d B o s A e s 9 8 4
 L g t t f t l m l l b e l J F C A W v
 T S t h S g A S t A g u t e 9 7 D e c e m b r [130]
 A f n d a m m a t r y t m f th x m A C r u
 L o S m m é d B e A 9 8 46

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MARCH 1919

International Abstract of Surgery

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INTERNATIONAL ABSTRACT OF SURGERY

MARCH 1919

COLLECTIVE REVIEW

SURGERY OF THE STOMACH

By RICHARD LEWISOHN M.D. F.A.C.S. NEW YORK CITY

MODERN stomach surgery dates back not more than about thirty years. Though operations on the stomach (gastrotomies) had been performed for many centuries the modern era of stomach surgery was started by Billroth and Woelfler. Billroth published a series of four resections of the pylorus for carcinoma in 1881 and Woelfler performed his first gastro-enterostomy in the same year. These two epochal contributions to the surgery of the stomach are the landmarks in the modern development of stomach surgery.

The performance of the first cholecystectomy by Langenbuch (1882) coincides very closely with Woelfler's first gastro-enterostomy (1881) yet whereas the surgical technique in the treatment of gall bladder diseases seems to have come to a standstill inasmuch as no fundamental changes have been added during the last ten years surgery of the stomach is still in a developmental stage. Even the last few years have produced and developed many new operative procedures in the treatment of diseases of the stomach. Many points of technique in gastric surgery are still under discussion.

In this paper we shall confine ourselves strictly to a review of the development of surgical technique in stomach surgery and operative results obtained by different procedures without entering into the question of diagnosis after treatment etc. In other words it is our object to review the different operative procedures used in the surgical treatment of diseases of the stomach at present and to compare the results obtained by these different methods.

MALFORMATIONS AND MALPOSITIONS

Malformations of the stomach are very rare. Eppinger and Schwarz have reported a case of microgastric in a healthy young woman thirty five years old. Her stomach consisted of a tube about three inches long its lumen being not larger than that of the small intestine. The patient had been perfectly well up to her thirty second year. The case though verified only by the X ray and not by autopsy findings is of considerable interest as it shows that even with a very minute stomach perfect health can be maintained. This point has special value in reference to the question of total gastrectomy where we shall discuss it in detail.

A very rare condition in the stomach is the formation of diverticula. The rarity of their occurrence is rather surprising. One might assume that in a dilated and hypertrophic stomach with pyloric stenosis the occurrence of diverticula would be as frequent as the occurrence of bladder diverticula in prostatic hypertrophy. As a matter of fact they are extremely rare whereas on the other hand oesophageal and intestinal diverticula are by no means uncommon. Even diverticula in the duodenum just beyond the pylorus are not very rare. Wilkie collected 68 cases from the literature five years ago.

A true diverticulum of the stomach was described by Ferguson. Other cases reported as those described by De Quervain and Tilger were secondary to cholelithiasis (traction diverticula). The pocket formation of the penetrating gastric ulcer of the stomach — a very frequent phenomenon — does not present a real divertic

ulum True diverticula are mostly accidental postmortem findings. Evidently they do not cause trouble to the patient and do not require operation unless they are secondary to some other disease. The rarity of a true diverticulum formation in the stomach is well exemplified by Carman's statement of the Navy Laboratory Mayo Clinic that he has observed only one case of gastric diverticulum.

The most frequent malposition of the stomach is the so called gastropotosi — often called Glenard's or Stiller's disease. It is usually coincident with ptosis of other organs in the abdomen (general visceroptosis, enteroptosis, nephroptosis, etc.). Glenard considered gastropotosis due to some mysterious liver condition. Stiller as due to a congenital universal asthenia.

The great majority of these cases should be treated medically. There are however a small percentage of cases in which the patients suffer from prolonged stagnation of food in the stomach and require operation. The Navy shows a large residue in the stomach from six to twelve hours after the ingestion of food and if medical therapy has failed an operative correction of the malposition of the stomach is indicated. Two ways are open for the establishment of proper drainage: either the suspension operation (Povsing, Duret, Coffey, Bevea) or gastroenterotomy.

Rovsing's operation is performed in the following manner:

An incision is made through the upper part of the right rectus muscle. Three rows of sutures are introduced on the anterior surface of the stomach parallel with the lesser curvature running from the cardiac end down to within about two or three inches of the pylorus. The sutures take up part of the musculature of the stomach and the rows are about three fourths of an inch apart. The ends are left long and are threaded on a cutting needle and passed from within out through the entire thickness of the abdominal wall. Those on the left side emerge close to the costal margin and those on the right side at a lower level to the right of the incision. The anterior surface of the stomach is scarified with a fine needle to insure adhesion to the parietal peritoneum. If the liver is low the suspensory ligament is shortened and then the prolapsed colon is attached to the lower border of the stomach by linen sutures shortening the gastrocolic omentum slightly. Heavy linen sutures are used in the stomach and after the abdominal wall is closed in layers the suspension sutures are tied over a square piece of glass covered with

gauze. The sutures are left in for four weeks when the patient is allowed to leave the bed.

Rovsing reports 256 cases of which 163 were operated upon, complete cures 16, great improvement 33, improved 18, slight improvement 3, death 11.

Duret operation consists in the passing of a continuous fine silk suture from right to left through first the fascia muscle and peritoneum of the abdominal wall and the serosa and muscularis of the stomach near the lesser curvature then twice at interval through the parietal peritoneum (left intact in the upper third of the incision) and the serosa and muscularis of the stomach following the line of the lesser curvature and finally through the peritoneum muscle and fascia of the abdominal wall of the opposite side. The suture is placed in the wound just below the xiphoid cartilage. When the suture is knotted the stomach is elevated and the lesser curvature firmly fixed to the abdominal wall.

Coffey elevates the stomach by suturing the greater omentum at a point one inch below the attachment to the transverse colon to the anterior abdominal wall about one inch above the umbilicus.

The principle of Bevea's operation is that by placing three rows of interrupted silk suture from above downward and from right to left through the gastrohepatic and gastrophrenic ligaments a single broad transverse fold or plication is formed in the ligaments shortening the ligamentary supports and elevating the stomach to normal position.

Bircher has tried to reduce the size of the stomach by plication.

It seems to be very doubtful still whether these different forms of operation give better clinical results than a simple gastroenterotomy. If the gastroenterostomy stoma is placed rather high up on the posterior wall of the stomach proper drainage will be permanently obtained and the stomach will return to its normal size in due time. The objection to the plastic operations is that in these emaciated patients fixation methods are apt to give way to tension and thus prevent permanent cures. Rovsing's results are certainly very gratifying. However it seems that a broad fixation of the stomach to the anterior abdominal wall may not only interfere with the normal movements of the stomach but may cause technical difficulties in subsequent operations.

Sleeve resections of the stomach as suggested by Schlesinger are certainly contraindicated. No benefit can be expected from such a radical procedure in an atonic stomach.

An interesting complication of the posed stomach is the possibility of the stomach turning around its own axis thus causing a volvulus. Such cases have been reported by Kocher, Berg, Borchardt and others. Kocher reviewed 8 cases with 13 recoveries. 7 of these cases were complicated by hour glass formation of the stomach. The simple volvulus cases can be permanently cured by a simple reduction of the stomach into its normal place as for instance in Berg's case. The volvulus secondary to hour glass stomach will require more complicated operative procedures.

A not uncommon malposition of the stomach is its transposition into the pleural cavity through a diaphragmatic hernia. There are about 1000 cases of hernia of the stomach reported in the literature. Diaphragmatic hernia is caused either by a congenital defect or by traumatism. Most of the cases reported were accidental autopsy findings. Before roentgenography became available a correct diagnosis could not be made with certainty during life. Fifty three of these cases were operated upon. 11 through the thorax and 4 by laparotomy with 14 recoveries (Scudder). The abdominal route seems to be preferable.

Many of these cases of hernia of the stomach do not cause marked symptoms. If the defect in the diaphragm is very large patients having this abnormality can go through life without suffering much discomfort. In other cases however serious complications arise from this abnormal position of the stomach. Gordon reports a perforated ulcer in the sac of a large diaphragmatic hernia. Downes cured a seven year old boy by gastrojejunostomy who had a complete obstruction of the duodenum through incarceration of the stomach in the hernial sac. On account of the poor condition of this patient a radical operation was not attempted.

It is advisable when possible to replace the stomach into the abdominal cavity and close the defect in the diaphragm in order to prevent a recurrence.

The four principal operative procedures on the stomach can be grouped as follows: gastrotomy, gastrostomy, gastroenterostomy and gastrectomy.

GASTROTOMY

Gastrotomy is used for the exploration of the stomach (1) for the removal of foreign bodies from the stomach and lower end of the esophagus (2) for the removal of benign tumors from the interior of the stomach (3) for gastric hemorrhage.

The position and direction of the incision varies

according to the requirements of the individual case. The incision is usually made in the middle portion of the stomach and carried in its longitudinal axis. A safe closure of the incision is obtained by a two or three layer suture.

Gastrotomy has to be resorted to rather frequently for the removal of foreign bodies from children (hairpins, coins, etc.). It is a simple operation and is not attended with any mortality even when done in early childhood.

A not uncommon indication for gastrotomy is the removal of large hair balls (so called tricho-bezoars) from the stomach occurring exclusively in young hysterical females. The diagnosis can be made with certainty since the X ray era as the hair balls produce a peculiar sharply outlined shadow on the plate. Matas has lately collected 44 operated cases from the literature and points out the excellent operative results obtained.

Gastrotomy is the proper treatment for the removal of benign tumors of the stomach. Benign tumors of the stomach: adenomata, myomata, fibromata, lipomata are very rare. Among 3500 autopsies Tilger found 14 benign tumors of the stomach. It is certainly a peculiar fact that the organ which is the most frequent seat in the body for cancer hardly ever shows a benign tumor. Ulcer and cancer are practically the only surgical diseases occurring in the stomach. Even syphilis, tuberculosis and sarcoma are so rare that they are practically negligible. This certainly points to an intimate connection between ulcer of the stomach and carcinoma though at the present time the question is by no means settled. Basch, Erdmann and Campbell have lately reported cases of local removal of benign tumors through a temporary gastrotomy. James and Sappington removed a large myoma from the wall of the stomach weighing 670 gr. by splitting the peritoneum without opening the lumen of the stomach. In some cases gastrectomy was performed because the benign nature of the growth was not recognized on the operating table.

GASTROSTOMY

The main indication for the performance of a gastrostomy is a stenosis of the esophagus or the cardiac end of the stomach seriously interfering with the nutrition of the patient. This stenosis may be caused either by a malignant growth or by cicatrix formation following the swallowing of acids or by a spastic condition of the cardia (cardiospasm). In the latter two conditions a temporary gastrostomy would serve to gradually dilate the stenosis by instrumentation through the stomach.

A great many different methods have been devised for the establishment of a temporary or permanent opening. The method of Stamm and Witzel have acquired general popularity on account of their simplicity. It is not advisable to use complicated plastic operations as the healing tendency of the emaciated patients is very much impaired.

Stamm's method—An opening is made halfway between the lesser and the greater curvature and a medium sized catheter is introduced into the stomach and fastened to the stomach wall with a suture. Three purse string seromuscular sutures are carried around the catheter at a distance of half an inch from each other. These are tied with the result that an inverted cone projects into the stomach around the tube. The tube is fixed to the parietal peritoneum with catgut sutures. This method is usually but erroneously called Senn's method. Senn operated in connection of a nipple toward the outside instead of toward the lumen of the stomach.

Witzel's method—The catheter is inserted and fixed in the wall of the stomach in exactly the same manner as in Stamm's method. It is then buried in the wall of the stomach for about two inches by Lambert suture. Two flaps of the stomach being stitched over the catheter. Fixation of the stomach to the parietal peritoneum is done as above.

The two methods give equally good results for simple gastrostomy. In exceptional cases (resection of the œsophagus) a connection between the thoracic end of the resected œsophagus and the stomach by means of a rubber tube is required. In these cases the two organs can be connected more easily if a tunnel shaped part of the stomach is formed with an upward direction thus making a temporary connection between the œsophagus and stomach during the process of feeding—a simpler procedure.

Frank's method—The stomach is drawn out of the abdominal cavity, a long conical diverticulum of the stomach is formed out of the anterior wall of the stomach and it is sutured to the parietal peritoneum. A small transverse incision is made through the skin a little above the costal margin. The skin between the two openings having been separated from the subjacent parts the diverticulum of the stomach is pulled through this channel and attached to the small skin incision. After the stomach has been opened a tube is guided through the mucous channel into the main cavity of the stomach.

Beck's method—as follows. An incision is made in the rectus muscle on the left side of the median

line. The stomach as it has passed toward the cardia is brought forward. It is grasped by a Tuffier forceps and held there in the center of the incision. Then another incision is made along the border of the rib a little higher than this border so that the opening afterward lies between the ribs forming the costal arch. This incision allows a tunnel to be made from the skin down through the rectus muscle toward the stomach and through this tunnel is brought forward the stomach in the shape of a small pouch. It is fastened with a circular row of sutures in the long median incision so that it will not slip entirely back into the abdominal cavity and a small cone shaped tube of stomach wall runs through the tunnel toward that latter opening. Now a flap is made from the skin of the costal arch wide enough to form a tube. It is sutured in the shape of a tube around a large sized catheter. The stomach is opened and the opening made about the size of the caliber of the newly formed tube of skin. The catheter is passed into the stomach and the stomach opening and the skin tube are sutured by exact suture. Closure of the median incision is made.

Jain's Pluck method—In this method a long mucosal lined tube is formed out of the stomach near its larger curvature. The tube is guided under the skin up to the level of the second rib thus making a feasible and direct union with the upper end of the esophagus. This operation is a much more formidable procedure than any of the former gastrostomy methods and should be reserved for exceptional cases.

Temporary gastrostomy has been advised by De Quervain in case of laryngectomy. The after treatment is thus materially facilitated. If no complication arises the gastrostomy is all well to close up after two weeks.

CASTRO-ENTEROSTOMY

One of the greatest advances in the surgery of the stomach is the operation of gastroenterostomy, conceived and executed by Woelfler in 1881. In his first operations he used any coil of the small intestine which presented itself in the operative field and attached it to the anterior wall of the stomach. As the operative results thus obtained were far from satisfactory he advised the use of a loop 40 or 50 cm. below the pylorus duodenoduodenally. Ten years later he suggested the anterior gastroenterostomy which was later modified by Roux into the posterior gastroenterostomy. Courvoisier modified the original Woelfler method by connecting a loop of the intestine in front of the transverse colon

to the posterior wall of the stomach (posterior antecolic gastro enterostomy) Hacker's operation posterior retrocolic gastro enterostomy (1885) represents the method of choice used at the present time for the performance of gastro enterostomy.

Many new operative procedures in surgery are presented in their final shape in the original communication. They are conceived so perfectly that they do not admit any modification. Woelfler's gastro enterostomy does not fall under this group. Though his idea was brilliant this method was limited until Hacker developed the posterior route and Petersen suggested the so called no loop operation. Up to that time operative results had often been very much impaired by the postoperative occurrence of a vicious circle requiring an entero anastomosis between the afferent and efferent loop (Braun).

It is not necessary to review here all the different suggestions which have been made in reference to the question of how to attach the jejunum to the stomach. For many years vertical and oblique openings in the stomach were practiced. The horizontal incision into the stomach is the simplest method of procedure and gives perfect results. The jejunum very often takes a direction to the right after its exit from the foramen of Treitz. This direction should not be used for the attachment of the jejunum to the stomach. It would be erroneous to make a temporary direction of the freely movable small intestine final by thus attaching it to the stomach. If such a position is found the jejunum should be turned over to the left in order to avoid a kink at the plica duodenojejunalis.

Clamps used in gastro enterostomy show a great variety in shape and construction. The so called Roosevelt clamp has lost some of its former popularity on account of its awkwardness. The majority of surgeons use two separate clamps for stomach and jejunum which are held together by an assistant. Gibson has used simple tongue depressors with rubber bands in place of clamps.

It is impossible to discuss here in detail the great variety of different sutures suggested for gastro enterostomy.

No consensus of opinion has been reached on the question of suture material. For the serosa suture Pagenstecher's linen thread or chromic catgut is used for the inner mucosa muscularis suture either a chromic or plain catgut. Different authorities have claimed that the occurrence of gastrojejunal ulcers depends on the suture material. The proof for this assumption

is missing however as gastrojejunal ulcers are encountered following gastro enterostomy in a certain percentage of cases no matter what suture material was used.

The peritoneal suture ought to be a running stitch. The mucosa suture on the posterior wall can be either interrupted or running on the anterior wall the best approximation is obtained by the Connell stitch.

Gastro enterostomy in its present technique gives excellent postoperative results. Though the retrocolic posterior no loop gastro enterostomy ought to be the method of choice surgeons should not hesitate to use the anterior antecolic or the anterior retrocolic (Brenner) gastro enterostomy if for technical reasons the performance of the posterior gastro enterostomy presents great difficulties.

As already stated a vicious circle with secondary dilatation of the stomach hardly ever occurs after a properly executed no loop gastro enterostomy. However an acute dilatation of the stomach immediately following gastro enterostomy has been observed by different authors (Lee, Luckett, Richardson, Doolin). The dilatation can be observed before the abdominal wound is closed. It often assumes enormous proportions the stomach suddenly filling up practically the whole abdominal cavity. The immediate introduction of a stomach tube relieves the very alarming symptoms.

A not infrequent complication following gastro enterostomy is gastric hæmorrhage. In fact hæmorrhage seems to be the only serious complication intimately connected with the operative procedure which cannot be avoided at the present time. Hæmorrhage occurs from the stomach side of the anastomosis after the clamps have been removed. It has been suggested that the vessels crossing the operative field be ligated separately before the mucosa of the stomach is incised. Even this however does not always constitute a sufficient safeguard. The symptoms are usually not very alarming. On the day following the operation the patients show some pallor, have a rapid pulse and complain of severe oppression in the epigastrium. Repeated lavages usually suffice to check the bleeding. These may be given with safety twelve hours after the operation without risk to the suture line. In exceptional cases transfusion of blood may be required to stop the bleeding or an exposure of the gastro enterostomy by a gastrotomy and ligation of the bleeding points may be necessary.

One of the most brilliant surgical appliances ever devised is the Murphy button (189)

The perfectness of Murphy's original conception of this device is proved by the fact that at the present time it is constructed and used in exactly the same way as when it was conceived by this master mind of surgery. Many modifications have been suggested for instance decalcified bone bobbins (Mayo Robson) silver plates (Crede) turnip plates (Baracz) rubber ligature (McGraw) but none of them have proved to have any practical advantages.

There seems to be a tendency among surgeons to discard the button based upon rare instances in which the button was retained in the stomach and had to be recovered by a secondary operation (Bevan Aubourg etc.). The most frequent indication for gastro-enterostomy is pyloric or duodenal ulcer. In these cases the suture gastro-enterostomy is no doubt the method of choice. However in partial or subtotal gastrectomies and in cases of perforated ulcers with peritonitis the application of the button presents a much simpler, safer and more rapid procedure. Weir modified the Murphy button by adding an oval elongation to its intestinal half in order to prevent the slipping of the button into the stomach.

Lewisohn has reported two cases of stenosis of the gastro-enterostomy stoma necessitating secondary operations four months after the original button gastro-enterostomy. In the first case the stenosis simulated a recurrence of the cancerous growth which had been removed previously.

Tuffier reports an interesting case of spontaneous disappearance of a gastro-enterostomy. Nine years after operation he was forced to re-operate upon the patient on account of recurrence of symptoms. He was unable to find any sign of his previous gastro-enterostomy. An excision of an ulcer of the lesser curvature cured the patient. Similar cases have been observed by Gerster and Kindl. In Kindl's two cases the gastro-enterostomy stoma had entirely disappeared six and twelve months respectively after the original operation. Poux and Monprofit have reported a case of complete disappearance of the stoma implanted according to Roux's method. Alamartine and Jaboulay reported a case of complete disappearance of a button gastro-enterostomy. It can therefore be stated that a gastro-enterostomy may become disconnected automatically no matter what method be used for its performance.

PARTIAL GASTRECTOMY

Whereas gastro-enterostomy had a somewhat stormy career until it was finally developed into its present status the technique of gastrectomy

has been changed very little since its conception by Billroth in 1881. Billroth originally united the proximal and the distal end after the resection *en masse* of the carcinomatous portion of the stomach (Billroth I method). Later he incorporated Woelfler's gastro-enterostomy by closing off the end of both stomach and duodenum and uniting the stomach with the jejunum (Billroth II). The latter method is to day the most popular among surgeons. Kocher's gastroduodenotomy is a direct implantation of the duodenum into the stomach, has not acquired general popularity though Kocher's operative results were excellent. However after extensive resections it is impossible to mobilize the duodenum sufficiently to make a safe implantation into the proximal end of the stomach.

Kroenlein and Mikulicz modified and simplified the Billroth II method by direct anastomosis of the proximal end of the stomach to the jejunum using a long loop of intestine. Kroenlein used the whole lumen of the stomach for a broad anastomosis. Mikulicz occluded two thirds of the lumen in the usual manner and used the lower angle of the stomach for a button gastrojejunotomy. Polya and Reichel have later followed the same procedure as Kroenlein. Balfour has modified this method by using the antecolic route instead of the retrocolic route of Polya. Balfour gives the following statistics of the operative results of the Mayo Clinic: 318 by the Billroth II method 1 per cent mortality, 104 by the Polya method 14.4 per cent mortality, 38 by the Balfour method 5.2 per cent mortality.

The part of the jejunum used for the anastomosis is about fourteen inches distal from the *plica duodenojejunalis*. Though there seem to be many theoretical objections (long loop antecolic route etc.) to this method Balfour's operative results are so excellent that this method deserves to be tested on a large scale. The advantage of the method is evident in extensive carcinomas involving the stomach. In the Billroth II method about two inches of normal stomach are lost by the three layer suture. The direct attachment of stomach and jejunum saves these two inches and thus increases the possibility of removing cancers which extend far up toward the cardia. Wilensky and Thalheimer have proved microscopically that it is perfectly safe to resect the stomach within half an inch of macroscopically noticeable cancer tissue.

Suture material and methods of suture do not differ materially from those used for gastro-enterostomy. It is of the greatest importance to establish a safe closure of the duodenal stump

as a duodenal leak is one of the gravest complications following gastrectomy. If the layer suture is not absolutely safe the head of the pancreas or omentum should be used for safeguarding the suture line (Meyer).

TOTAL GASTRECTOMY

Whereas partial or subtotal gastrectomy is very frequently performed at the present time total gastrectomy must be considered a rare operation. Cancer occupying the whole stomach is not a contra indication to its removal by operation. However in the vast majority of these cases metastasis in other organs or extensive adhesions to the surrounding organs as the pancreas diaphragm etc. stand in the way of a radical removal. Flechtenmacher has lately collected 36 cases of total gastrectomy. The first successful case was reported by Schlatter in 1897. The pathological report showed that in removing the stomach he had divided the œsophagus and duodenum. Thus this case undoubtedly represents the first total gastrectomy whereas many of the other cases reported were not total but only extensive partial gastrectomies in so far as small portions of the stomach were left behind. In most instances œsophagus and jejunum were united (Mönnichan, Herczel, Bardeleben, Schlatter). In others œsophagus and duodenum were anastomosed. These patients learn to lead a perfectly normal existence. X-ray pictures show that a new stomach like reservoir is formed similar to the dilatation of the common bile duct after cholecystectomy.

CARDIOSPASM

One of the most popular methods of dealing with severe medically intractable cardiospasm was temporary gastrostomy and gradual dilatation of the cardia by bougies guided on an endless string. Others have used the intrathoracic route. A new and very simple operative procedure was suggested by Heller in 1913. He applied to the cardia the Pammstedt operation for congenital pyloric stenosis. After a blunt liberation of the œsophagus two longitudinal incisions were carried across the cardia at its anterior and posterior aspect through serosa and muscularis without opening the mucosa. The patient made an uneventful recovery. This simple method ought to be given an extensive trial since it seems to present a simple technical solution of a difficult surgical problem.

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In dealing with affections situated at the cardia such as carcinoma spastic conditions etc. two ways are open to the surgeon the intrathoracic and the abdominal routes. The intrathoracic route which has been advocated by Sauerbruch, Meyer and many others will not be discussed in this paper. It would be properly dealt with in a review of surgery of the œsophagus. The thoracic route will probably be used extensively during the next few years as Duval and others have lately shown that intrathoracic organs can be safely approached without the use of differential pressure apparatus. Though thoracic surgery offers a promising field affections of the cardia are approached with more safety from the abdomen. Shock and danger of infection are certainly encountered in a much less degree in abdominal than in thoracic operations. Bircher and others have demonstrated that the cardia can be freed from its surrounding tissues by bluntly liberating the œsophagus from its attachments to the hiatus œsophagus. The œsophagus can thus be pulled down into the abdominal cavity for a distance of about 7 cm.

Bircher in reporting his successful case of removal of a carcinoma cardiae states that after thus liberating the tumor and applying clamps above and below the tumor the stomach was partially closed. The œsophagus was pulled into the lumen of the stomach with guide sutures which were directed from a temporary gastrostomy. Œsophagus and stomach were firmly attached by three layer sutures in the fashion of a Stamm fistula.

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ment of ulcers of the lesser curvature one thing is certain simple gastro enterostomy will not cure the condition

Two procedures which were extensively used some years ago should be discarded 1. a simple excision of the ulcer bearing area and sleeve resection Both procedures are frequently followed by the formation of hour glass stomach and recurrence of symptoms of pain retention etc Local excision followed by gastro enterotomy proximal to the excised area is a very simple and good procedure and gives gratifying results In stead of excising the ulcer Balfour's cautery method may be used which gives excellent results Balfour frees the portion of the gastrohepatic omentum in the region of the ulcer and carries a Paquelin cautery through the ulcer until an artificial perforation is produced He then destroys the whole ulcer bearing area and closes the opening in the stomach by layer suture The resected gastrohepatic omentum is then replaced as reinforcement of the suture line

If the ulcer is of fairly large size and if the anatomical conditions are favorable partial gastrectomy prevents a good method of procedure The stomach is divided proximally to the ulcer and is then removed down to the duodenum No doubt this operation gives very good functional results However it seems in inspecting the specimen that the size of the ulcer which is usually about the size of a dime is out of proportion to the removal of two thirds of the stomach The mortality cannot fail to be larger with this procedure than with the simpler method above described Postoperative functional result seem to be better with partial gastrectomy than with the other methods

The majority of these ulcers are of small size though we not infrequently meet with large ulcers so densely adherent to the surrounding tissues that their radical removal is out of the question Sometimes they perforate and form an abscess in the anterior abdominal wall In such cases radical removal is too great a risk and very good results are obtained by closing the opening with omentum (suture is usually impossible) and establishing a temporary jejunostomy (Stamm or Witzel method)

Baum has suggested the application of Wilms' method of pyloric exclusion to the treatment of ulcers of the lesser curvature He tied a fascial flap around the stomach in five cases central to the ulcer and then performed gastro enterostomy This procedure is not commendable as the closure will be of the most temporary nature and the stomach will assume an hour glass shape

HOURLY GLASS STOMACH

The surgical indications in hourly glass stomach depend entirely on the extent of the underlying disease Though hourly glass formation of the stomach may be based on a congenital abnormality the vast majority of such conditions are based on an ulcer usually in the midportion of the stomach In some instances midgastric resection is a good procedure In favorable cases in the absence of adhesions to the surrounding organs partial gastrectomy including the ulcer bearing area and the pyloric portion of the stomach down to the pylorus will give the best functional results The majority of cases however will not admit of such a procedure on account of extensive adhesions to the liver pancreas etc

Gastroplasty is a horizontal gastrotomy and closure of the wound in the opposite direction does not give good results If the two pouches are large and movable gastroenterostomy (Woelfler) will safeguard against recurrence of stasis If the two pouches cannot be sufficiently mobilized to allow a broad anastomosis and only a broad anastomosis will relieve the symptoms a gastroenterostomy between the proximal pouch and the jejunum will often relieve the symptoms permanently Weir and Foote suggested the establishment of a double anastomosis between the most dependent parts of both pouches and the jejunum Volvulus of the stomach as a complication of hourly glass stomach has been observed by Mazzotti and Langerhans The volvulus formation was caused by perigastric adhesion in the neighborhood of the ulcer

CHRONIC PYLOPIC AND DUODENAL ULCER

Though as stated in the introductory remarks this report was intended to be confined to the surgery of the stomach we shall deal in this and the following paragraphs with duodenal as well as pyloric ulcers for three reasons (1) It is very often absolutely impossible to decide whether an ulcer has originated from the pylorus or from the first part of the duodenum (2) The surgical treatment for an ulcer at either site is practically the same (3) The vast majority of these ulcers are duodenal and their occurrence is so frequent in view of the fact that about 80 per cent of stomach operations are done for the cure of duodenal ulcers that it is impossible not to consider this common disease in this review

The operative treatment for cases of pyloric and duodenal ulcer in the majority of cases consists in posterior gastroenterostomy with or without pyloric exclusion Up to a few years ago very few attempts were made to deal with the

ulcer locally. Of late however, local excision has acquired increasing favor among the surgeons. This holds true especially for the duodenal ulcers if they are situated on the anterior wall and do not present adhesions. If local excision has been done gastro-enterostomy and pyloric exclusion should be added to insure proper drainage which may be impaired by closure of the defect.

Pyloric ulcers ought to be treated by pylorotomy if there is any suspicion of malignancy. There can be no doubt that a certain number of simple ulcers undergo malignant degeneration. It is often difficult to decide by palpation whether an ulcer is of malignant character. Such experienced surgeons as Crile and Lilienthal have reported cases in which they performed a primary gastro-enterostomy on account of the general debility of the patient. When a few weeks later they reopened the abdomen to resect the tumor which they had considered malignant at the first operation the tumor had entirely disappeared proving that it was of inflammatory and not of malignant character. Therefore when in doubt resect if technically possible.

It is very important that the whole stomach be explored thoroughly. The Mayo Clinic has drawn attention to the frequency of duplicity of ulcers for instance a pyloric ulcer and an ulcer of the lesser curvature may be present at the same time. It is obvious that in order to cure the patient we have to deal with both ulcers. The necessity of giving every case the benefit of a thorough exploration makes it apparent that local anæsthesia will not and should not acquire general popularity for abdominal operations.

The decision as to whether we are dealing with an ulcer or a spastic condition based on disease of other organs as the gall bladder appendix etc is often very difficult. It requires a great deal of experience and a fine touch to determine this question. Nothing is more beneficial for the patient than gastro-enterostomy if he is really suffering from a duodenal or pyloric ulcer. His pains and most of the other symptoms which have made him a chronic invalid for years will disappear very shortly after the operation. On the other hand nothing is more harmful for a patient than to have a gastro-enterostomy performed without an ulcer being present. He not only will not be relieved but will be decidedly worse after the operation. An ulcer ought to be demonstrated it shows a scar on the serosa and a very typical stippling. In demonstrating this stippling one ought to be careful not to use sponges as this same picture can be produced artificially by injury to the serosa.

PYLORIC EXCLUSION

The different methods of pyloric exclusion may be divided into four groups

- 1 Unilateral pyloric exclusion (Eiselsberg)
- 2 Infolding method (Kelling Mayo)
- 3 Exclusion method with the aid of auto plastic material (Wilms Strauss)
- 4 Exclusion methods with the aid of foreign material suture etc (Kelling Berg Cackovic Parlavacchio Biondi)

Eiselsberg's method consists in a pyloric or pre pyloric division of the stomach and closure of both ends in layer sutures. His method is the only one which guarantees permanent closure of the pylorus. However it is not used at the present time since the procedure is too formidable as compared with the simpler methods described below.

The infolding stitch method (Kelling Mayo) consists in narrowing the antrum pylori by three or four infolding stitches.

Wilm's method of pyloric exclusion makes use of a free transplant a piece of fascia lata which is used as a constricting band around the pylorus. Strauss has freed the muscularis of the pylorus in its entirety from the mucosa without opening the lumen of the stomach and applied a constricting autotransplant taken from the anterior sheath of the rectus muscle. He then closed muscularis and serosa by interrupted sutures. Polya has used the ligamentum teres hepatis instead of fascia lata.

Simple exclusion of the pylorus with the aid of a ligature was practiced as far back as 1899 by Kelling in a series of animal experiments. It was introduced into clinical surgery by Cackovic and Berg. A double Pagenstecher linen suture armed with a needle is carried around the posterior stomach wall and is held in place by taking several bites in the anterior wall. The suture is then tied and the pylorus thus excluded. This exclusion stitch has acquired great popularity in the treatment of acute and chronic ulcers of the duodenum on account of its simplicity and absolute safety.

Parlavacchio has substituted a cotton tape for the Pagenstecher stitch.

Biondi makes a longitudinal incision across the pylorus through serosa and muscularis and peels off the musculo-serosa coat from the mucosa. The mucosa is then cut between two ligatures which have been tied around the tube of the mucosa at both ends of the incision. The stumps are carbolyzed and the seromuscularis incision is closed with a few sutures.

None of these methods with the exception of that devised by Eiselsberg have stood the tests of

other investigators as to the permanency of the occlusion Moschcowitz and Wilensky (Kelling Mayo method) Baggio and Neuhof (Wilm's method) Leriche (Parlavacchio method) Lewysohn (Biondi and Cackovic Berg method) have shown in animal experiments or in re-operated patients that none of these methods occlude the pylorus permanently

Berg's exclusion stitch should be given preference among the different methods. The clinical results are just as good with this very simple method as with any of the other more complicated methods. The period of total exclusion of the pylorus seems to be about the same no matter what method is used probably six to eight weeks.

Opinions as to the necessity of pyloric exclusion in addition to gastro-enterostomy in the treatment of pyloric and duodenal ulcers still differ materially among surgeons. Many claim that the clinical results are just as good with simple gastro-enterostomy as with gastro-enterostomy and pyloric exclusion yet it has been shown beyond doubt by animal experiments (Kelling, Hartmann, Guibe, Cannon and Blake) and by Rav (Haertel, Schueller and Petron) that so long as the pylorus remains permeable most of the food passes through the pylorus and not through the stomach. By feeding dogs with solution of thionin Lewysohn was able to trace the passage of the food in the specimen. Dogs with simple gastro-enterostomy showed a dark blue color throughout the whole length of the duodenum if the pylorus was excluded practically all the blue passed directly through the stomach into the jejunum.

There can be no doubt that simple gastro-enterostomy often yields complete relief from symptoms. The regurgitation of bile and pancreatic juice into the stomach neutralizes the hyperacidity thus causing relief of symptoms. Gastro-enterostomy plus pyloric exclusion not only gives the patient the benefit of these chemical changes but in addition to that it safeguards the ulcer temporarily against mechanical insults thus hastening the healing of the ulcer bearing area.

ULCERS OF ANTERIOR AND POSTERIOR WALL

Whereas the great majority of ulcers of the stomach are situated either in the pyloric region or at the lesser curvature both the anterior and the posterior wall of the stomach can be the seat of an ulcer. Ulcers situated at the posterior wall are found according to Balfour in about ten per cent, those of the anterior wall in about one per cent of the cases. The operative removal of ul-

cers of the anterior wall of the stomach consists in excision and layer suture of the incision. The procedure is simple and does not require detailed discussion. The only possible technical difficulty may arise if the ulcer has become adherent to the anterior wall.

The removal of ulcers of the posterior wall usually presents a difficult technical problem. If they are not adherent to the surrounding organs (pancreas, colic vessels, etc.) they can be approached through an incision of the anterior wall of the stomach with local excision of the ulcer and closure of the defect and layer suture of the incision in the anterior wall of the stomach. This is the method of the Mayo Clinic. Adherent ulcers of the posterior wall are treated by partial gastrectomy. The stomach is divided centrally to the ulcer. This complete division of the stomach makes it possible to safely divide adhesions between the ulcer and pancreas and large vessels respectively under the guidance of the eye thus avoiding possible serious injuries.

A new method of exposing the posterior wall of the stomach was described by Pauchet based on the anatomical studies of Lardennois and Okinczyk the so-called intercolo-epiploic route. The serous membrane of the transverse colon is divided at its junction with the greater omentum in its full length. By lifting up the apron of the omentum thus freed the posterior face of the stomach comes into full view as well as the pancreas and duodenum since the transverse mesocolon is pushed downward. This new method ought to be tried extensively as it seems to be of great value affording an excellent exposure of the parts involved.

PYLOROPLASTY

Pyloroplasty as a method of overcoming stenosis of the pylorus is rarely used at the present time. The method of Heinecke reported by Frommueller and of Mikulicz i.e. longitudinal division and transverse suture of the pyloric region have been abandoned and substituted by gastro-enterostomy. Loreti's pylorodiosis (stretching of the sphincter by a bougie) is of historical interest only. The only method of pyloroplasty which has survived and is still in use at the present time is Finney's gastroduodenostomy. However this method is limited to special cases in which gastro-enterostomy cannot be easily performed for anatomical reasons or in which the duodenum is ballooned up and can then be used for an anastomosis (Balfour). These special conditions are rarely met. Thus many surgeons of large experience have never had occasion to employ gastroduodenostomy.

Finney's operation is performed as follows. A line of interrupted sutures of fine silk is placed parallel to the pylorus. A continuous suture of chromic catgut is placed in front of the silk sutures. Stomach and duodenum are now opened and the anastomosis is made just as in a gastrojejunostomy.

PERFORATED PYLORIC AND DUODENAL ULCER

It is generally agreed that the only proper treatment for perforated pyloric or duodenal ulcers is operative interference. The sooner the operation is performed the better the prognosis. The mortality for acute perforated ulcers if operated upon within the first twelve hours is less than 10 per cent. The proper realization of the importance of immediate operation has been somewhat tardy. The acute abdomen has been mastered very slowly by the surgeons. Acute appendicitis caused an enormous mortality until Fels and McBurney advised surgical intervention. In the same way until about ten years ago many cases of acute perforated ulcers of the stomach and duodenum were allowed to die without surgical interference. The first operation for acute perforation of the stomach was performed by Mikulicz in 1880. The patient died. The first successful case was reported by Heusner in 1892. Finney collected 268 cases from the literature reported between 1880 and 1900.

The excellent results achieved by modern surgery in the treatment of acute perforations of the stomach are most gratifying. Deaver has operated upon a consecutive series of 46 cases with one death. Gibson has reported 14 cases with one death. Sullivan 20 cases with one death. Thus the mortality has been reduced from 50 per cent (Mayo Robson, Petren) to 5 per cent in the last decade certainly a brilliant achievement!

The opening in the stomach ought to be closed by purse string and one or two additional layer sutures. The closure is not always easy especially if the tissues surrounding the perforation are indurated. However a closure by suture must be insisted upon. Simple packing of the opening (Corner) or fascial transplantation (Raabe) are absolutely unsurgical procedures. An occasional recovery by these methods does not prove their efficiency.

The majority of the perforations occur on the anterior wall of the pyloric duodenal junction, a small minority at the lesser curvature under the liver. Baker has advised the administration of methylene blue by mouth in order to facilitate the location of the perforation. While there is absolute consensus of opinion that the opening

of the stomach or duodenum ought to be closed immediately opinions still differ as to the advisability of immediate gastroenterostomy. Statistics do not seem to solve this question because immediate operative results seem to be as good with simple suture (Shea, Gibson) as with suture plus gastroenterostomy.

It seems likely however that the late and permanent results will be better if a button gastroenterostomy is added followed by a pyloric exclusion. The dictum that following the perforation an ulcer will heal spontaneously does not seem to hold good for all cases. Recurrence of symptoms following a simple suture is by no means infrequent. *Castro enterostomy plus pyloric exclusion* can be performed in a few minutes and does not add to the dangers of the operation. On the other hand it simplifies the after treatment materially and improves the patient's chances for a permanent cure.

BLEEDING ULCER OF THE STOMACH

An ulcer can produce symptoms just as alarming as those of a perforation by the occurrence of a profuse hæmorrhage. Operative interference is indicated when the hæmorrhage is so profuse that the life of the patient is at stake. The stomach is exposed after a preliminary blood transfusion has been given. In many instances the ulcer can be felt and treated locally by excision, cauterization etc. or a gastroenterostomy with exclusion can be performed. It is often very difficult to find the bleeding points by inspection of the stomach. Roosing has successfully employed gastroscopy and diaphanoscopy for purposes of transillumination of the stomach. It should be kept in mind however that the cause of a gastric hæmorrhage is very often extragastric. It may be the œsophagus, the appendix or the spleen. Balfour has reported cases in which chronic gastric hæmorrhages were cured by splenectomy.

GASTROJEJUNAL ULCERS

One of the most difficult tasks to deal with in gastric surgery is the gastrojejunal ulcer. The causative factors for these ulcers are not quite clear at the present time though many theories have been advanced to explain them. It seems that circulatory disturbances or defects in the suture lines may be causative factors. Yet assuming these theories to be correct one ought to find gastrojejunal ulcers much more frequently. However it is safe to say that though they do not seem to be so rare as formerly supposed the percentage is not more than about 3 per cent among gastroenterotomized patients.

There is still doubt as to the real cause of ulcers of the stomach. It seems that the infectious theory (Rostown) is one of the most popular at the present time. It is obvious that the same cause which originally produced the ulcer may at a later date give rise to an ulcer formation in the gastro-enterostomy stoma. It is impossible to say at the present time whether there is only one or whether there are several causes to be considered. In some instances the retained Murphy button has given rise to an ulcer at the site of the stoma. The first case of gastrojejunal ulcer was reported by Braun in 1899. During the following ten years occasional cases were reported; during the last ten years the number has grown very rapidly in accordance with the improvement in diagnosis of disease of the stomach based on roentgenography.

Paterson's paper published in 1909 is the most comprehensive study on this subject. He says that jejunal ulcers are the result of altered physiological conditions produced by operation where as gastrojejunal ulcers are probably a direct consequence of operation. This classification seems rather didactic. When ulcers are exposed by an incision they have usually acquired such size that it is impossible to say whether they originated in the jejunum or at the suture line. However it seems that the majority of ulcers are gastrojejunal.

In a rather large number of cases the Pagenstecher thread has been found hanging free into the lumen of the gastro-enterostomy. The Mayo Clinic has therefore discontinued the use of non-absorbable material for the serosa suture and uses chromic catgut exclusively for gastro-enterostomy. However even this safeguard does not seem to prevent the occasional occurrence of a gastrojejunal ulcer.

The selection of the proper surgical procedure in cases of gastrojejunal ulcers often taxes the ingenuity of the surgeon more than any other technical problem in stomach surgery. They may be approached either through an incision of the anterior wall of the stomach (Moynihan) or by re-opening the gastro-enterostomy. It is not always necessary to separate stomach and jejunum entirely. If the ulcer is situated at the anterior wall local excision of the lesion without interference with the posterior connection will simplify the procedure materially. Sometimes however a local incision is impossible on account of dense adhesions of the transverse colon and danger of injuring the middle colic artery. In such cases a second gastro-enterostomy may be performed. There can be no doubt that the no-loop gastro-

enterostomy has advanced stomach surgery materially. However this method makes reoperation on gastro-enterostomy cases extremely difficult. In a fair proportion of cases the Roux operation *en I* can be employed. After excision of the old stoma direct connection of the short loop is often impossible and Pours operation presents the only possibility of re-establishing normal condition by implanting the distal end into the stomach and using the proximal end for an end-to-end anastomosis.

Balfour says that the general plan in treating gastrojejunal ulcers is to expose the line of anastomosis by either a transgastric or transejunal incision, search for retained sutures and for the ulcer and remove both the latter either by itself or with the entire anastomosis. If the anastomosis is constricted and enlargement possible and safe such treatment is satisfactory; if however much induration and infection exist excision of the anastomosis, closure of the opening and gastroduodenostomy are indicated.

There are not yet a sufficient number of reported cases to decide which of these methods deserves preference or whether any one of them is really free from recurrence of the gastrojejunal ulcer.

Perforation of gastrojejunal ulcers into the peritoneal cavity resulting in death of the patient has been reported by Braun, Brodnitz, Urrutia and others. If as stated above the chronic cases of gastrojejunal ulcers are difficult to deal with the acute cases offer practically insurmountable difficulties. So far no case of cure of an acute perforation of a gastrojejunal ulcer has been reported.

CONGENITAL PYLORIC STENOSIS

Until a few years ago gastro-enterostomy represented the only surgical procedure for the treatment of congenital pyloric stenosis. Since then the Rammstedt operation, published in 1913, has acquired great popularity. The operation consists of incising in a longitudinal direction the thickened and hardened pylorus through serosa and muscularis down to the mucosa without perforating the mucosa. The division of the constricted muscular ring effects a re-establishment of the pyloric lumen and a disappearance of the obstructive symptoms. Whether this Rammstedt operation will entirely supplant gastro-enterostomy in such cases remains to be seen. The rapidity of its execution and the possibility of feeding these starved infants immediately after the operation are certainly strong points in its favor. Yet the mortality has not been considerably reduced as compared with gastro-enterostomy.

Using the Rammstedt operation Downes in 67 cases had a mortality of 4 per cent Lewis in 18 cases 17 per cent Robertson in 16 cases 31 per cent By gastro enterostomy Scudder in 17 cases had a mortality of 17 per cent Still man in 10 cases 10 per cent Richter in 19 cases 10 per cent

The danger of injuring the mucosa may be avoided by making a superficial incision into the thickened muscularis of the pylorus and dividing the rest of the muscularis bluntly In some cases the muscularis can then be easily peeled away from the mucosa in others this procedure is not easily accomplished If the mucosa should be injured accidentally the opening can be closed with a piece of omentum

In order to effect a perfect cure the thickened pylorus must be divided in its whole length and thickness If the incision fails to divide the entire thickened area—if it is just a little short—a cure will not be effected If the incision is made only one millimeter too large on the duodenal side there is grave danger of opening the duodenum which is especially thin in these cases In other words the margin between what must be done to accomplish the object and what must be avoided to prevent serious damage is such a narrow one that the Rammstedt operation is not yet free of risk or danger (Lewisohn) Yet it seems that this operation will gain popularity and if the pitfalls are carefully avoided the operative results will be further improved

A grave danger in the postoperative course of cases of congenital pyloric stenosis is non union of the abdominal wall It seems immaterial whether layer or through and through sutures have been used the extreme emaciation of these infants prevents proper healing

Kansohoff and Woolley have reported an interesting case of thymic death seven months after a Rammstedt operation Careful study of the specimen showed that the pylorus was patent and that the muscularis at the site of the incision had been replaced by a thin band of fibrous tissue

Strauss has reported 65 cases in which he applied the following method After having performed the Rammstedt incision he liberates the muscularis from the mucosa in about two thirds of the circumference of the pyloric ring He then splits the inner portion of the muscle ring using both ends as a flap which covers the denuded mucosa His mortality is 5 per cent considerably less than that of any other operation

Haggard has advised the use of local anæsthesia for the performance of the Rammstedt operation

CARCINOMA OF THE PYLORUS AND OF THE MIDDLE PORTION OF THE STOMACH

The operative technique for removal of the carcinomatous pylorus or of cancer of the middle portion of the stomach has been discussed in a previous section Cancer of the middle portion of the stomach without involvement of the pylorus is rare On the other hand cancer originating from the pylorus often extends over two thirds of the stomach

It is advisable to be very radical in the indications for gastrectomy Only those cases should be refused the benefit of a radical removal in which the extent of the tumor or metastasis in other organs (liver peritoneum etc.) render the radical removal out of question The size of the tumor is no contra indication In fact many of the large tumors are perfectly movable and can be resected easily

The large percentage of operable cases among carcinomata of the stomach is well demonstrated by Gussenbauer and Winiwarter's observations They showed that among 54 autopsies for carcinoma of the stomach 223 represented a local growth without any metastasis

Adhesions to surrounding organs especially the pancreas are often of inflammatory nature and should not be an obstacle to an attempt at radical operation If however the tumor deeply invades the pancreas, or if the middle colic artery is involved radical removal is not advisable The high mortality of simultaneous resection of the stomach and transverse colon makes this procedure inadvisable Haberer for instance lost 5 out of 6 such cases Voelcker Meyer and others have reported successful cases of removal of the stomach and transverse colon for carcinoma However conditions favorable for this procedure are found very rarely

Lilenthal and Crile have advised the two stage operation in very emaciated patients This procedure ought to be reserved for cases of extreme emaciation Temporary improvement following gastro enterostomy usually induces the patient to refuse a second operation Furthermore the risk of implanting carcinomatous cells into the gastro enterostomy is considerable

SARCOMA OF THE STOMACH

It is very interesting to note that whereas the stomach is one of the predilection sites for carcinoma sarcoma of the stomach belongs to the rarities Up to 1914 only 157 cases could be collected from the literature (Flebbe) A large number of those were autopsy findings which shows their rarity as a disease for surgical intervention

Surgical indications and technique are of course identical with those discussed under carcinoma of the stomach. The majority of the cases seem to be lymphosarcomata.

TUBERCULOSIS OF THE STOMACH

Tuberculosis of the stomach is even rarer than sarcoma. About one hundred cases have been reported in the literature. Broders reports from the Mayo Clinic that among 2,501 gastric operations only one case of tuberculosis was encountered. It is still very doubtful whether tuberculosis can and does primarily occur in the stomach. The ulcers may be solitary or multiple. The operation was done for symptoms of pyloric obstruction and the surgeon was assuming that he was dealing with carcinoma. Gei has reported a case in which simple gastroenterostomy is supposed to have cured an extensive tuberculosis of the stomach.

SYPHILIS OF THE STOMACH

Syphilis of the stomach is either of the congenital or acquired type. The disease is rare, however, not nearly so rare as tuberculosis. Downes and LeWald, for instance, have reported 8 cases which they observed in the course of two years. The treatment of gastric syphilis is strictly speaking medical. However, pyloric obstruction may necessitate a gastroenterostomy. If the involvement of the stomach is very extensive a jejunotomy may be indicated.

PHLEGMONOUS GASTRITIS

Phlegmonous gastritis is a very rare and always fatal condition. Jacoby collected 64 cases from the literature up to 1900. Since then about 90 cases have been reported (Lehnhoff). The prognosis is extremely bad. Among all the cases reported in which the diagnosis of general phlegmonous gastritis was beyond question, there is mention of only one case which did not terminate fatally. This case was reported by Koenig. He resected the stomach and the specimen showed true diffuse phlegmonous gastritis. This is the only case of recovery on record. Local abscesses of the stomach wall originating from ulcers have been repeatedly operated upon with success. The cases, however, should not be confused with those of true phlegmonous gastritis.

LEIOMYOMATOSIS

Leiomyomata, so-called leather bottle stomach, consists of a diffuse swelling of the connective tissue of the stomach wall involving chiefly the submucosa. It gives rise to a marked thickening of the stomach wall and a corresponding diminution

of the lumen of the stomach. It was first described by Brinton in 1854. Unrelieved by surgical measure, the disease is uniformly fatal. Lyle has collected 28 operated cases from the literature and added one case of his own. Among operative methods used for these 29 cases were total gastrectomy 3 times, partial gastrectomy 13 times, gastroenterostomy 9 times, jejunotomy 4 times. There is a possibility that the condition may be a precancerous state.

CHOLECYSTOGASTROSTOMY, CHOLEDOCHOGASTROSTOMY, CHOLANGIOGASTROSTOMY

Operative measures connecting the biliary system directly with the stomach may be required in cases of inoperable carcinoma of the common bile duct, biliary fistula following injury to the common duct, etc. Kehr has performed 60 cystogastrostomies and 3 choledochogastrostomies. Pasman has reported a successful case of cholangiogastrostomy. The technique of these operations cannot be discussed here in detail, as it would require an extensive review of different operations on the biliary system.

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

ASEPTIC AND ANTISEPTIC SURGERY

Tuffier and Sacquépée *Analysis and Results of the Methods of Primary Secondary and Late Treatment of War Wounds* (Analyse et résultats des méthodes de traitement primitif secondaire et tardif des plaies de guerre) *Arch de méd et pharm mil* Par 1918 lxx 517

The authors report was presented to the Fourth Interallied Surgical Conference in March 1918. They have undertaken a biologic analysis of the different methods of wound treatment which they have been able to follow. Surgical treatment is more easily followed as regards its biological effects than other methods of treatment which are not generally adopted.

In studying the infections of war wound it was evident that the multiplication of infecting organisms becomes appreciable from the seventh to the thirteenth hour after injury and continues henceforth very rapidly. Anaerobic infections proceed more rapidly than the aerobic the former being perceptible toward the twelfth to the fifteenth hour the latter from the eighteenth to the thirtieth hour. In the primary period the wound is contaminated but the infection has not spread in the secondary period infection is developed but has not become deep in the late period infection has become thoroughly established.

As regard the defences of the organism against infection the streptococcus staphylococcus septic vibron and bacillus bellonensis have been shown to be capable of developing in normal fresh serum. The study of phagocytosis of war wounds has not led to any important practical conclusions. Tuffier and Desmarres have shown that coincident with the period of cicatrization of a wound a fibrinous reticulum appears and no matter what the number or nature of microbes they do not then affect the progress of cicatrization.

With regard to the use of chemical disinfectants for the sterilization of wounds the authors consider that in general the action of such agents is defective if infection is profound and it is not complete unless the wound has been perfectly regularized. Antiseptics in general are damaging to the tissue cells and their qualities change when they come in contact with the wound. The physiologic action varies according to the strength of the dosage.

After surgical clearance and primary suture of a wound two types of severe infection may occur aerobic infection generally due to the streptococcus and anaerobic infection due to the agents of gaseous gangrene associated or unassociated with the strep-

tococcus. Other eventual infections are later and less severe and may be attributed to the staphylococcus the proteus the pneumobacillus etc. The action to be taken in any particular case can be regulated by the following principles.

As far as possible every wound primarily sutured should be submitted to aerobic and anaerobic cultures. Tests should be made at the end of operation about the sixteenth hour after injury and later if indicated.

If the clinical reactions raise any doubts in the surgeon's mind he should be guided by the bacteriologic findings. But if the clinical aspects are such that grave complications are feared the sutures should be cut irrespective of the bacteriologic results.

In the case of retarded primary suture it is prudent to abstain from suturing if the wound contains any streptococci or any anaerobes which might cause gangrene or even any large number of bacilli of medium virulence.

From the surgical standpoint immediate primary suture when it is possible and when practically every chance of infection is removed realizes the maximum advantages. It brings about immediate or rapid sterilization and maintains it and functionally it assures the best union. All other methods give a poorer result. If the primary surgical treatment cannot be complete then it should be as complete as circumstances admit.

Surgical practice has demonstrated that in the majority of cases wounds can be freed from all infection in their early period and without being necessarily sterile can be transformed into suturable wounds.

The general tendency which experience has approved is to bring the operation to its logical conclusion as soon as possible by practising primary suture in its different modes. The course of this practice is determined by (a) the desire for maximum functional preservation by limiting the sacrifices of tissue (b) necessity of avoiding infection.

The first condition is a matter of personal judgment. The second must depend on clinical experience and laboratory findings.

When for any reason primary suture is not indicated or practiced it becomes necessary to treat the infection. This treatment itself presupposes a prior surgical treatment. Among the methods which have stood the test of time many are good none are perfect. No one method in particular can guarantee infallible recovery from certain infections especially certain streptococcal infections. W. A. BRENNAN

Morrison J T H Riley J N J and Bashford
E F The Treatment of Wounds L 11
Lo d 98 30

The authors compile the results obtained by the Carrel Dakin treatment of wounds in 60 cases. The type of wound treated were as follows: wounds of the soft parts 37 per cent compound fractures 46 per cent wounds of joints 17 per cent.

The cases are divided into those operated upon during the first twenty-four hours after injury and those operated upon after twenty-four hours or without preliminary cleansing. The results show earlier healing in the first class.

The author's treatment follows the technique laid down by Carrel and Wundt and is sutured only when cultures show no organism to the field; otherwise the treatment is continued.

I E BISHKOW

Wright A E Fleming and Colebrook. The Conditions Which Permit the Sterilization of War Wounds by Physiological Action (De la question de la stérilisation physiologique d'une plaie de guerre). Paris, 1918. 563.

The treatment of bacterial infection has been undertaken with a certain amount of preconceived ideas. The surgeon who treats wounds by the action of antiseptics usually supposes that the organism is incapable of defending itself against microbial infection. The contribution of the author is a study of what the organism can do and the limits of its antibacterial power and especially the action in this respect which can be expected from the blood and the blood serum. The action of various sera etc. on the common type of infecting microbes is shown in a number of plates and tables.

The results of the study show the author that there are many surgical precepts believed to be true which should be forgotten. These the authors sum up thus:

1. The teaching is false that it is necessary before losing blood to undertake sterilization and as a consequence to avoid primary union and only practice secondary suture after having applied antiseptic treatment. It is not beyond all doubt as regards primary suture that a wound after immediate resection and surgical clearance can be regarded as sterile; it is equally certain that secondary suture of a wound which shows favorable conditions and a purely erysipelatous infection directly contributes to sterilization when the entire infected dead space left in the wound.

It is wrong to teach that one can learn when to close a wound from cultures and a direct examination of the pus. It is much more rational to base judgment on the results of a culture.

3. Formerly it was taught that a suture could not be made successfully in a wound containing a hemolytic pyogenic streptococcus. It is known that leucocytes in favorable conditions can fight that

microbe successfully as naturally as in the case of other streptococci and that the condition can be readily cured by suture.

4. It was believed that it was necessary to employ chemical solvents to remove necrotic tissue of contaminated wound. The authors have learned that dead tissue can be dissolved by the trypsin ferment liberated by the disintegrated leucocytes and that the liberation of the ferment can be accelerated by the action of hypertonic saline solution which causes the disintegration of the leucocytes in the discharges.

5. It was formerly taught that sterilization could only be obtained after frequent and repeated applications of antiseptics. The authors have learned that nothing prevents any part of a wound which has been cleared by lavage of all albuminous substances from being sterilized by a single application of antiseptic.

W A BRENNAN

Perkins J A Preliminary Report of a Method for Estimating in Vivo the Germicidal Activity of Antiseptics. J. S. G. Phil. 9181. 41.

A method for estimating in vivo the germicidal activity of antiseptics is being tried out at the Pennsylvania Hospital and a preliminary report is presented. In order to reduce as far as possible the element of the personal equation the work is done by one man. The technique employed was as follows:

The inoculations were made from the same part of the surface of the wound, one definite spot being selected and used throughout. The attempt was made to get a uniform sized drop the same plating medium loop was used each time. The drop obtained was inoculated at the bedside in a common plain bouillon, the bouillon suspension undiluted was immediately poured over an agar agar plate which was then covered and incubated upside down and marked with the patient's number, the number of the culture, and the time the culture was taken. The plates were then taken to the laboratory and placed in an incubator and kept at 37°C. At the end of twenty-four hours the colonies were counted microscopically.

The author cites three cases in which the method was tried. The first chloramine T in oil of eucalypti and hypochlorite solution. His results show that after dressing with chloramine T there was an initial drop in practical sterilization of the wound surface followed by a gradual reappearance of the organisms; the germicidal activity lasting sixteen to eighteen and twenty hours respectively in the three cases.

With the hypochlorite solution there was an initial drop followed by an immediate increase in the number of colonies within an hour. In the other two hours showing how short a time the antiseptic acts.

With chloramine T in chloroform solution there is an initial drop followed by a gradual rise in the count showing a germicidal activity lasting throughout the twenty-four hours.

The author believes that through this method some idea can be obtained of the comparative strength of antiseptics and the length of time during which they are active when applied to human tissues in the presence of infection

G W HOCHREIN

Ehrenpreis Indications and Technique of Secondary Suture (Indications et technique de la réunion secondaire) *Presse méd Par* 1918 LXVI 490

Ehrenpreis says that there are three conditions to be fulfilled before a wound can be secondarily sutured

- 1 The wound must be sterile This does not mean that microscopic examination and cultures made from secretions must be absolutely sterile Experience has shown that when the clinical conditions appear satisfactory the existence of a few microbes even streptococci does not constitute a contra indication to suture

- 2 The wound surface must be as level as possible If there are any dead spaces or cavities they form a good lodging place for microbes

- 3 The wound should be closed without undue tension in the approximation of the tissues

The author believes that secondary suture should be done under a general anæsthetic as local or regional anæsthesia diminishes the vitality of the tissues which ought to be in the best physiological condition

The author gives the detailed technique of secondary suture comprising incision resection and trimming of the wound edges and tissues and suture The stitches should not be too near each other No matter how perfect the disinfection and no matter how minute the surgical preparation a revival of infection must always be feared and it is well to make a filterable suture the stitches being at least 2 cm apart This applies to the muscles and aponeurosis When there are extensive tissues drainage for twenty four to forty eight hours is desirable

W A BRENNAN

ANÆSTHETICS

Blomfield J Recent Work on Anæsthetics *Practitioner Lond* 1918 CI 79

Cotton of Toronto is quoted as saying Ethyl ether is not an anæsthetic and the analgesia which comes from the administration of commercial ether is not due to ether but rather to the impurities occurring in it The impurities may be alcohols or acetones which act antenally or aldehydes which irritate the nasopharynx or bronchi Absolute diethyl ether will not anæsthetize If a small amount of carbon dioxide is present the patient enters anæsthetic and analgesic stages To obtain anæsthesia proper one must have acting a narcotic together with an analgesic e.g diethyl ether and carbon dioxide

The use of anæsthetics in war surgery at the front continues to provide much difference of opinion as

to the best methods in cases of severe shock and hæmorrhage Spinal anæsthesia from which much was hoped is in most hands regarded as disappointing and dangerous in these cases Gwathmey finds that the performance of painful dressings gives a wide field for most advantageous use of oral anæsthesia

Discussing the toxic factors of some of the common anæsthetics Graham advances the view that the evil effects of chloroform are due to hydrochloric acid originating in the body from the decomposition of the anæsthetic Certain anæsthetic substances notably those which belong to the group of alkylhalids are capable of yielding strong mineral acids in the tissues as dissociation products For example chloroform is broken down in such a way as to yield hydrochloric acid in the body

The comparative efficiency of local anæsthetics has been subjected to experimental investigation by Sollman The relative efficiencies as established by experiment are summarized thus

- 1 For anæsthesia of mucous membranes cocaine beta eucaine alpin and tropacocaine are the most useful Alkylization increased the efficiency from two to four times the mixtures however do not keep well and must be recently made

For infiltration and injection anæsthesia cocaine novocaine tropacocaine and alpin are equally efficient Beta eucaine and quinine with hydrochloride are intermediate apothosin and potassium sulphite (or chloride) are inefficient Efficiency is not increased by alkylization Several of the synthetic substances can completely take the place of cocaine

Local anæsthetics are preferred by Farr in the performance of abdominal operations of all kinds Novocaine is the anæsthetic preferred For orthopedic operations Elmer favors ether and nitrous oxide and oxygen and insists on the desirability of only light narcosis

T B FRELICH

Achard H P Spinal Anæsthesia with Novocaine and with Stovaine (Rach anesthésie à la novocaine et rachianesthésie à la stovaine) *P ogress méd Par* 1918 p 299

Within two years the author has practiced 25 low spinal anæsthesias novocaine being employed in 111 cases and stovaine in 114 The stovaine used was a solution of 10 cg per ccm The novocaine was a solution of 10 cg per ccm The dosage was 7 to 8 cg of novocaine and 6 cg of stovaine

The author has made a comparative study of the results obtained with the two agents from which he concludes

- 1 By practicing only low spinal anæsthesia and using dose not exceeding 6 cg for stovaine and 7 or 8 cg for novocaine more than 100 spinal anæsthesias have been done without accident Under the restrictions these are not dangerous methods of anæsthesia

- 2 Minor accidents (headache nausea etc) were a little more frequent with stovaine than with novocaine

came. Moreover the minimum tempo ary and constant fall of arterial pressure was $1\frac{1}{2}$ centimeters for stova ne on the average and only 1 centimeter for novocaine. Such differences between the two

anæsthetics are of no importance as regards the general results. Anæsthesia usually lasted one and one fourth hours, respective of the agent used.

W. A. BRENNY

SURGERY OF THE HEAD AND NECK

HEAD

Wagstaffe W. W. and Adie W. J. Notes on a Series of 161 Cases of Gunshot Wounds of the Head. *J. Roy. Army M. Co. p. 918 xxxi 3 7*

These cases were treated at No. 7 General Hospital from May to August 1916. The types of head cases sent from the casualty clearing station to General Hospital No. 7 in which operation seemed likely to be of benefit were those with slow pulses. Cases with rapid pulse as a rule were not sent back as they usually are too hopeless to submit to operation.

The type of operation is a follo s excision of scalp wounds cutting a way bon to sho about half an inch of uninjured dura no dep search for the projectile covering the exposed brain by the scalp a short period of drainage by tubes through the angle of the flap. The brain has only been drained in exceptional cases.

There were two methods of bringing the cases to the General Hospital: (a) by motor ambulance which brought the patients directly from the casualty clearing stations without operation on the patients reaching their destination within twenty-four hours after being wounded; (b) by barge. These cases are brought from the casualty clearing station where they have usually been operated upon. They are moved at a variable period after operation.

The authors report is based on 136 cases of injury to the skull. 5 cases of scalp wound requiring operation and 21 cases trephined a total of 84.

There were 73 cases of penetrating wound of the dura and 27 non-penetrating wound. Of this number 7 per cent died following operation.

Postmortem examinations were held on these cases. Thirteen deaths occurred within forty-eight hours of the time of wounding and in nearly all of these cases the cause of death was involvement of the lateral ventricle accompanied by laceration of the brain. At the postmortem ependyma of the lateral ventricle was found to be pierced and the lateral ventricle cavity and often the other ventricles as well contained lacerated brain matter and blood.

On admission to the hospital an X-ray was taken of the patient's skull and the patient then sent to a ward. After a rest of from four to twenty-four hours he was operated upon. Operation was usually of the most conservative type and consisted in the case of penetrating wound of the dura of an excision of the wound turning down a flap removing the

bone so as to give a margin of at least one-fourth of an inch of healthy dura around the perforation suturing the excised wound and closing the flap with lateral drainage. In some cases of extensive injury of the brain a drainage tube has been inserted through the excised wound into the brain.

The operation was performed under general anæsthetic with an injection of morphia, atropine and scopolamine previously.

The after-treatment consists in maintaining the patient in a condition of perfect quiet. Restlessness is a very common feature of these cases and is generally combated with injections of morphia and atropine.

Healing of wounds has been remarkable and only one case was discharged to England with a large granulating surface. This patient had a very large hernia cerebri which subsided under repeated lumbar puncture and became well covered with healthy granulation tissue.

Thirty-six cases were operated upon before admission to General Hospital No. 7. Of this number 10 per cent died after admission. The large proportion died of purulent basal meningitis, only one case dying of cerebral laceration and involvement of the ventricles.

A small number of lacerated scalp wounds were admitted to the hospital. They were all treated in the same way by excision of the wound and suture. If it was impossible to approximate the edges of the wound completely a drainage tube was inserted. Healing was uniformly good but in two cases suppuration occurred.

The following points were emphasized by the author as it is impossible to draw any but tentative conclusions at this time.

1. There is a great advantage in being able to keep patients in one place after operation without subjecting them to the tedious vibration involved in a journey.

2. Before operation patients stand transport very well even very seriously wounded cases.

3. The nursing of head cases demands a large number of highly trained attendants.

4. Before operation every case of gunshot wound of the head should be X-rayed.

5. Recovery of function in paralysis the result of gunshot wound of the head is most remarkable.

6. Retention of a foreign body in the brain is not immediately and necessarily hurtful. Twenty-three cases of this class have already gone to England from this hospital.

G. W. HOCHREIN

Wollstein M. A Further Study of Experimental Parotitis *J Exp Med* 1918 xxviii 377

In a previous paper it was shown that the parotid gland and testicle of a cat injected with a bacterial sterile filtrate of the salivary secretion of children in the active stage of parotitis can be made to develop a pathological condition having several points of resemblance to that present in mumps in human beings.

The presence of acute cases of parotitis in military camps near New York City provided the opportunity to repeat the experiments with material from adult cases.

In order to repeat the work done two years ago mouth washings in normal saline solution were obtained from soldiers suffering from acute parotitis for one to twelve days. The washings were filtered through a Berkefeld candle N and the filtrate which was sterile by ordinary aerobic and anaerobic culture methods was inoculated into the parotid glands and testes of healthy half grown cats.

As a result of these experiments the author makes the following summary.

A new series of inoculations into cats of the filtered sterile salivary secretions derived from cases of parotitis has been performed. They confirm the observations made in 1915 and 1916 and extend them to include the epidemic parotitis occurring among military forces. Incidentally confirmatory evidence of the filterable nature of the causative agent of mumps has been obtained.

It has been determined that the saliva of man and of inoculated cats and the inoculated glands of the latter animals contain the filterable infective agent.

The lesions present in the inoculated organs conform to those described in the first publication. In addition the lymph glands adjacent to the salivary glands on the uninoculated side were sometimes found to be swollen and to exhibit microscopic lesions. Probably the involvement resulted from salivary and lymphatic infection.

The virus of parotitis was detected most readily in the saliva during the first three days of the disease less easily on the sixth day and not at all on the ninth day. It was detected also in the blood of patients showing marked constitutional symptoms and in the saliva of a case of recurrent mumps at the period of enlargement of the parotid glands but not two weeks after the swelling had subsided. It was not detected in the cerebrospinal fluid.

GEORGE E. BEILBY

Roberts J. B. Treatment of Gunshot Fractures of the Mandible *Ann Srg Phil* 1918 lxviii 245

Roberts calls attention to the frequency of mandibular fractures with the present method of warfare. The shape, situation and function of the lower jaw and its relation to other facial structures lend to the vulnerating missile an extraordinary opportunity for serious complicating lesions.

The usual fractures occurring in the body of the mandible are not difficult to reduce and keep reduced if both jaws have intact teeth. Where there is a great loss of teeth or a marked ablation of bone the difficulty of maintaining the reduction is much greater. Teeth which are simply loosened should not be taken out unless they impede reduction or are situated within the line of fracture.

After the fragments are brought into apposition in uncomplicated fractures the upper and lower teeth should be kept in contact by closing the mouth and holding the mandible firmly against the upper jaw by a figure of eight bandage of occiput or chin or by some similar appliance. The mouth should be cleansed with disinfectant washes frequently and feeding carried on by introducing liquids through the crevices between the teeth or through a tube passed between the cheek and teeth into the space behind the last molar. When a simple bandage will not give the necessary support a molded splint should be applied to the outside of the skin to constitute a hollow cap fitting the front and lower surfaces of the mandibular region.

If the tendency to displacement is persistent the fragments should be wired together. This may be done by passing a strong silver thread around several teeth on each side of the fracture and twisting the ends tightly with pliers. To prevent motion at the site of fracture dental splints are worn inside the mouth.

Union of ordinary fractures of the mandible occurs in about five weeks. The normal occlusion of the teeth should be re-established in gunshot fractures as soon as possible even before there is any general suturing of soft tissues if these are greatly lacerated. Unless this is accomplished the fracture displacement will probably become permanent and reconstruction of the contour of the face very difficult to effect. Several types of splint have been devised for this purpose such as bands or caps fitted or cemented to the teeth or a metal arch or vulcanite substitute for the bone introduced between the fragments.

The author quotes Blair's suggestions on the treatment of mandibular fractures due to gunshot and shrapnel injuries. These are in part as follows:

1. Fractures of the body of the mandible in front of the last existing tooth with no loss of bony substance. This type may occur from concussion without the projectile striking the jaw and fixation may be obtained by the usual methods of civil practice.

2. Fractures of the body of the mandible in front of the last existing tooth with considerable displacement or considerable loss of substance and with few teeth remaining. The majority of gunshot fractures belong in this class. In one type of this fracture there is a loss of substance at the symphysis tending to draw the fragments together in front with the occlusal surfaces of the teeth facing each other. In the second type the loss of substance is in the lateral portion of the bone. In both types fixation may be secured by fixing the fragments in normal relation.

to the upper teeth by means of the metal jacket and the splint described by Hayes. In the third variety of this fracture there is a tendency for the lower jaw to swing over to one side on account of loss of substance. In this case the outer surface of the splint on the opposite side may be furnished with a metal flange to engage the teeth of the upper jaw. This acts as an inclined plane to throw the teeth into proper occlusion when the jaws are closed.

3. Fracture of the mandible behind the last existing tooth. These fractures include those of the body of the bone, the ramus and condyle. If no tendency to displacement is present and no loss of substance has occurred the simplest method of treatment is fixation of the lower jaw to the upper with ligatures which are directly applied to the teeth or by the employment of Colmer's posterior or lingual arch. Where there is a loss of bone with displacement in fractures of the angle and ascending ramus the fragments may be reduced without a splint. If the ramus is displaced either forward or laterally the fragments may be held by wiring the teeth to those of the upper jaw and applying an intraoral plastic splint of mulling compound. Where no teeth are available for wiring an intermaxillary fixation with ligatures will may be applied.

The complication of gunshot fractures of the mandible are sepsis, necrosis of fragments, pyemia or secondary hemorrhage, septicaemia, edema of the tongue, throat, or glottis producing a dangerous dyspnoea. G. W. HOEHN

Bloodgood J. C. The Treatment of Tumors of the Upper Jaw with the Cautery. *T. So. Th. S. G. Ass.* Baltimore, 9 Dec. mb.

The employment of the cautery in the past is a complete removal of malignant tumors is an old method. The author's experience during the past five years has demonstrated that the cautery is much to be relied on as to the details of its application.

When the result of operations for the removal of tumors of the upper jaw with the knife alone is compared with the results of the removal of identical tumors with the cautery it is found that the mortality is distinctly decreased and cures have been accomplished with less mutilation. Whether the actual number of cures has been increased cannot be demonstrated at the present time.

The reduction in mortality is associated with the employment of local anesthesia alone or in combination with light chloroform general anesthesia.

In many instances it is safer to remove the disease involving the upper jaw in stages. It is remarkable how much can be done under local anesthesia alone. When a general anesthetic is necessary, chloroform in the author's experience seems to meet the indications best. It does not interfere with the use of the cautery. It is the best anesthetic when perforations are performed in the region of the oral cavity. It should never be pushed to complete narcosis. The patient has no memory of pain and although he is so lightly under the in-

fluence of the anesthetic that all reflexes are active he remains more or less quiet.

When chloroform is not pushed to complete anarcosis the dangers seem practically eliminated and the operations can be repeated at intervals of three or four days. In some cases there have been as many as fourteen operations.

The surgeon should hold himself responsible for the anesthetic and direct its administration. In all of the author's cases the pulse and blood pressure are recorded every five or ten minutes. The chloroform is rarely administered longer than one hour. When the cautery instead of the knife is employed the operation can be continued at any moment.

The duration of the operation and the number of operations largely depend upon the general condition of the patient and the extent of the neoplasm.

When the cautery is employed it is possible to remove the tumor piecemeal and to destroy from tumor tissue into the surrounding healthy tissue without danger of dissemination. While with the knife one must give the tumor tissue a wide margin and remove the entire mass *en bloc* at one operation.

In tumors involving the upper jaw the complete excision with the knife when the disease is extensive always sacrifices more healthy tissue than when the cautery is employed and the danger of this single extensive removal with the knife is greater.

In the removal in stages with the cautery it is almost possible to have a pretty positive microscopic control as an indication that enough has been done. One also learns quickly to distinguish by its gross appearance a granulation tissue in which there is no tumor tissue from that which still contains tumor tissue which can be checked by the removal of a piece with the cautery for microscopic study.

The new growth should be attacked with the cautery from two points. One should be on the tissue at the border of the tumor. This not only destroys the infiltrating area but excites the healthy tissue beyond a granulation tissue which of itself largely protects against secondary invasion. At least during the period of complete removal. The second attack should be upon the new growth itself, if possible from the center out.

These two methods of attack are varied according to the size of the neoplasm and its local growth and the anatomic character of the surrounding involved tissue.

S. Bilu P. The Surgical Treatment of Pseudarthrosis of the Lower Jaw Following War Wounds. (M. Pat. Qu. d. t. m. t. ch. u. g. l. d. p. d. th. e. d. l. m. a. ch. e. i. f. e. n. o. é. c. u. t. s. a. d. e. t. m. t. m. d. e. g.) *B. H. o. m. é. m. S. d. e. h. d. e. P.* 98138

Between September 1916 and April 1918 Seblau performed 29 operations for pseudarthrosis of the lower jaw due to war wounds. In cases he did a metallic osteosynthesis in 5 cases he used catgut rib graft and in 22 cases a tibial osteoplastic strip.

Both the osteosynthesis cases suppurated and only partial success was obtained. In the 5 costal cartilage graft cases 4 suppurated 3 of these were however successful and 1 partly successful the fifth case was a complete failure. Of the 2 tibial graft cases, suppurated the cases gave 12 successes 4 improvements 2 partial successes and 4 failures.

The fact that 13 of these patients showed a purulent suppuration within a few days or weeks after the operation indicates an enormously high percentage for this complication and is the reason why more excellent total results were not obtained. It appears due to the fact (1) that infection latent for a long time in the region of an open and infected fracture can be awakened (2) that the integumental covering of the scars was poor and easily exposed the graft region to infection from without (3) that the buccovestibular mucous was accidentally perforated during the grafting.

There are some practical conclusions to be drawn applicable to the surgical treatment of mandibular pseudarthroses.

1. Surgery has completely cured only about one half the cases.

It has ameliorated and will probably eventually cure one third of the remainder a sixth has simply been improved and in the remaining sixth there is no effect.

3. Suppuration if it is followed by total or almost total elimination of the graft is the only element which plays an important part in the plastic and functional results of the operation.

4. The results of metallic prosthetics are not encouraging.

Sebileau discusses the details of his technique as well as the circumstances which affect the success of the operation. W. A. BRENNAN

New G. B. The Use of Heat and Radium in the Treatment of Cancer of the Jaws and Cheeks *J Am M Ass 1918 LXVI 1369*

Fifty even cases of cancer of the jaws and cheeks were seen at the Mayo Clinic during 1917. Thirty-two of the patients were inoperable, four had glandular involvement but operation was considered advisable and a block dissection was done in addition to the treatment of the local growth. Twenty-one had no glandular involvement and were treated with the cautery and radium. Of these twenty have been traced and fourteen of them have been free of local recurrence for from six to eighteen months. One patient recauterized three months previously has had no recurrence thus far. One died of lymphatic leukemia. Two of the fourteen patients developed glands of the neck and had block dissections. One patient had a hopeless local recurrence and two died from cancer.

Five of the twenty-one patients had been operated upon before coming to the clinic. Seven of the epitheliomas were associated with and apparently had originated in a leucoplakia. In one case the

tumor developed on a pathologic fracture of a bone cyst of the jaw. Nineteen were in men and two in women. Before operation patients are advised that they must return for observation at least once a month during a period of six months or more following the operation so that they may have immediate care if there is any recurrence.

The operation is performed under ether anesthesia. All teeth in the area involved or those that prevent good exposure of the growth are removed. If possible, the entire growth is excised with a knife cautery and the base is crutized with soldering irons. If this is not possible the irons are inserted into the tumor. A water-cooled speculum prevents the burning of the lips or cheeks and it affords good exposure. The cautery should be used longer than seems really necessary, at least from twenty to forty-five minutes. If the growth involves the antrum the soldering irons are carried up into the antrum and the entire growth gradually burned away. A slow heat that gradually cooks the tumor is preferable and soldering irons are found to be more satisfactory than the electric cautery. Secondary hemorrhage occurring during the first ten days or two weeks following cauterization if not readily controlled by packing must be controlled by ligation of the external carotid with the lingual and facial branches.

Two weeks after the cauterization, most of the slough will have cleared off and radium is then applied directly into this open area. It is directed into the ulcerating area on lead applicators using a 50 or 100 milligram tube within a silver tube from fifteen to twenty hours without screening. If the growth has involved the cheek, radium is applied with screening externally over the cheek thus cross firing. Large pieces of sequestrum usually come away from the jaw in from a month to six weeks after operation. In a month from the time the first radium treatment is completed further treatment is given and repeated as often as the condition indicates. If there is any recurrence noted a second cauterization is done followed by more radium.

The author believes that by the addition of radium to the treatment of these tumors much more is accomplished. The immediate results in the treatment of epithelioma of the jaws and cheeks by the use of the cautery and radium seem to have been very encouraging. There was no operative mortality.

F. C. ROOS

Pinel. Two Cases of Almost Complete Phosphorous Necrosis of the Jaws (Deux observations de nécrose phosphorée presque complètes des maxillaires) *Bull méd Par 1918 XXXI 375*

The author gives the details of two cases of almost complete maxillary phosphorous necrosis occurring in employees in pyrotechnic factories.

The necessity for surgical operation in such cases is evident as a period of waiting for the spontaneous elimination of sequestra exposes the patient to many dangerous local and general complications especially secondary infection.

All surgeons are not agreed with regard to the most opportune time for operation. Some think the disease is an expression of general intoxication and that operation should be deferred as an early operation does not arrest the process. The German school favored early operation, an early resection being considered as definitely stopping the progress of the disease.

The author takes rather a middle course, judging the case from its clinical manifestations. If the toxic process is evidently in progress it is advantageous to wait for limitation of the disease, mobilizing the sequela, etc. in a preliminary operation, the necessary resection being done at a later operation. The author believes that this technique gives a solid permanent result and helps bone regeneration.

W. A. B. ENNAN

Janeway H. The Treatment of Tumors of the Superior Maxilla. *A. S. G. Phila. 1911. 135.*

Janeway reports the result of 35 cases of tumor of the superior maxilla treated during the past three and one-half years by means of radium assisted when necessary by conservative operations.

Of the benign tumors encountered the papillomata were the simplest. The very definite verrucous were found on the simple, circumcised papilla, many showing little tendency to metastasize and resembling in every way the common wart of the skin. The second variety, on which especially the growth forms sessile and very superficially papillary projections which spread superficially over the surfaces and are prone to become true epitheliomata. One case of simple papilloma and one each of the other two verrucous were treated with radium. These papillary growths are easily cured by surface application of radium.

One case of myoma was met with. This was cured by radium but left a bad facial deformity. Two cases of fibrosarcoma both starting in the nose and subsequently invading the antrum were in the series. The radium treatment was not successful owing to the late stage at which it was started.

There were two cases of osteoma of the antrum. These do not yield to radium because of the dense bone of which they are formed. However, the results of service in retarding the growth.

Two cases of giant celled sarcoma were reported. In one a single treatment led to complete retrogression of the tumor.

One case of chondroma of the superior maxilla was treated with radium but at the time the paper was written it was too early to report a definite result.

One case of melanosisarcoma of the superior maxilla was unaffected by radium.

Of the malignant tumors of the upper jaw carcinoma attracts the most attention, there being 43 cases in the series. The site of origin of cancer of the upper jaw bears a direct relation to the prognosis. The three principal sites are antral, nasal, and oral. In 21 cases the tumor began in the mouth upon the

superior alveolus. In 18 it began supposedly within the antrum though in 6 the antrum was later found not involved. In 4 it began within or in close relation to the nasal cavity.

Cancer of the upper jaw is more frequent in males than in females, possibly because men smoke more than women and are engaged in occupation subjecting them to inhalation of dust and inflammatory conditions depending on outdoor occupation.

Seventy-nine per cent occurred between the ages of forty-five and seventy, 83 per cent between fifty and sixty years.

In the oral cases the first symptom was ulceration. A few patients complained of loosening of the teeth in the superior alveolus. Later there was increase in the size of the ulcer, swelling of the alveolus and later of the face.

In the antral cases the first symptom was irritation of the eye due probably to obstruction of the lacrimal duct, followed by swelling of the face or alveolar nasal obstruction, pain and often loosening of the upper teeth.

In the nasal case the symptom was epistaxis, obstruction of the nasal charge and irritation of the conjunctiva. The regional lymphatics are involved late in the disease.

In studying the pathology of cancer of the upper jaw four types of epidermal cancer were found. The simplest form possesses a papillary structure and its epithelial cells form a dense intertwining column with no intervening connective tissue. The squamous cell variety contains pearls and is composed of large atypical pavement cells. This variety is very malignant and leads to death by rapid local growth though the regional lymphatics are not involved until late in the disease. The columnar cell type is as malignant as the squamous cell. The fourth form represents an atypical proliferation of cells characteristic of the Schneiderian mucosa. The adamantinomatous form is a fifth group.

Carcinoma of the antrum when treated early gave excellent results with the radium.

There was no immediate mortality from the radium. There was occasionally a primary overdosage. Those making use of radium should bear in mind that limited improvements mean much to the patient even though no permanent cure is possible.

G. W. HOCHREITZ

Naftger J. B. Injury to the Face with Involvement of the Maxillary Antrum. *J. Iowa St. M. Soc. 1911. 365.*

Naftger reports 7 cases of injury to the face with involvement of the maxillary antrum. Five were due to direct violence, in 2 the force was probably applied to the side of the face. He believes that this class of work should be done by a rhinologist who thoroughly understands anatomy of the nose and accessory sinuses.

In all the cases reported the anterior antrum wall was fractured in several places. There were a number of small fragments of bone depressed and

the fragments were pushed into place as carefully as possible. With the exception of one case there was no necrosis.

He recommends that in these cases with depression of the anterior wall and blood in the antrum it is policy to open through the anterior wall, elevate the fracture and establish drainage through the nose.

M. N. FEDERSPIEL

Major R. H. and Black D. R. A Huge Hemangioma of the Liver Associated with Hemangiomas of the Skull and Bilateral Cystic Adrenals. *Am J M Sc* 1918 clii 469

Hemangiomas of the liver are the most common and familiar tumors of this organ but are usually first discovered at autopsy. The case here reported was under observation for two years before death occurred and is of interest because of the size of the tumor and because it was associated with similar tumors of the skull and adrenals. The liver extended 40 cm. below the xiphoid process in the midline and weighed 18160 grams. The whole organ was involved there being very little normal liver tissue left. The literature was searched and no similar tumor of the liver was found so large. It was ten times the normal weight of the liver and weighed nearly half of the patient's entire weight.

Authors differ as to the cause of hemangiomas but in this case the evidence was strong that they were dealing with a genuine cavernous angioblastoma in the sense of Borst. The gross picture of the liver with such a large amount of the liver parenchyma replaced by cavernous blood spaces is strongly suggestive of an invasive growth.

The skull showed two prominences one over the left eye and the other over the left temple. This swelling was produced by a thickening of the bone which was unusually spongy; the large spaces were filled with blood. In some places these spaces seemed to be on the bone in others they gave the appearance of dilated blood vessels coursing in the bone marrow, also large dilated blood vessels surrounded by fibrous tissue were lying on the bone. This picture seems analogous to that in the liver where the cavernous blood spaces show a markedly developed connective tissue framework lying against the liver cells.

Both adrenals were enlarged and both together weighed 350 grams. Their surface was very uneven, numerous cyst-like structures were evident and here and there were extensive hard gritty areas. Some of the cysts were filled with a clear yellowish jelly-like material and others contained shrunken masses of dark reddish material apparently clotting blood. Nearer the center of the gland the spaces between the columns of adrenal cells were markedly dilated, some of which were filled with blood clot. In many places also the adrenal tissue showed marked evidence of degeneration, masses of adrenal cells were in varying stages of disintegration so that often there was little left but the framework of reticulum.

Since the larger cysts were filled with a fluid closely resembling lymph it is perhaps safe to label this specimen as a case of lymph cysts of the adrenal. Many spaces were filled with blood and in some sections this was so prominent as to cast a suspicion that this was an hemangiomatous process although not constant enough to warrant this diagnosis.

P. W. SWIFT

Frazier C. H. An Operable Tumor Involving the Gasserian Ganglion. *Am J M Sc* 1918 clii 483

With few exceptions all tumors of the gasserian ganglion are tumors of the middle or posterior fossa with only incidental involvement of the ganglion and not infrequently of other contiguous nerves as well. In 3 only out of 13 cases in which the tumor was exposed on the operating table did the tumor involve the gasserian ganglion. Of the three only one was operable.

This patient was a man fifty-three years of age who for three months had suffered pain in the distribution of the second division of the left trigeminal. It was at first jumpy in character later becoming intense. This was followed by numbness in the upper lip and was associated with or followed by neuralgia above the left eye. The case was regarded as trigeminal neuralgia and treated with alcoholic injections.

Obtaining no relief from this treatment the patient was operated upon through a butterfly incision. The middle meningeal artery was exposed and divided and the foramen spinosum blocked with cotton. The dura was reflected and an almond-shaped encapsulated growth on the ganglion was exposed. No difficulty was experienced in separating the tumor except in the neighborhood of the second division and sensory root where the tumor was firmly adherent. The sensory root was avulsed, the tumor removed *in toto* and the outer two thirds of the ganglion cut away. The patient made an excellent recovery. The pathological diagnosis was endothelioma.

In both of the other cases the tumor was inoperable and palliative measures only were instituted. In one a decompression was done and in the other the sensory root was divided.

P. W. SWIFT

Brindeau A. Trepanation in the Newborn. (De la trépanation chez le nouveau né.) *Arch mens d'obst et de gynéc.* Par 1918 vii 103

The author did 4 trepanations in the newborn. In the first case there was a sinking in of the cranium with fracture after a difficult forceps delivery. The dura was injured and the brain damaged by a bone chip. The infant made a good recovery and is normal two and a half years later.

In the second case after a very difficult forceps delivery the child was almost dead and showed symptoms of meningeal hemorrhage. Operation was done while the child was comatose. Although

t revived somewhat after operation it soon died. The third and fourth cases were similar i.e. crushing of the cranium and meningeal hemorrhage respectively after difficult labor with forceps manipulations. The infant with the meningeal hemorrhage died the other made a good recovery.

The author reviews the literature. He thinks that opening the cranium in the newborn is not so severe an operation as might be believed. It is clearly indicated when the cranium is crushed in because it is the surest method of reducing bony depression. A small orifice suffices to permit the entry of the reducing instrument. The operation is also indicated in the meningeal hemorrhages of the newborn. The result obtained is encouraging. A limited transcranial trepanation can be employed or the large transcranial trepanation followed by Cushing's method. W. A. Braxton

Hess G. B. Histology and Pathology of Subdural Hemorrhages. *M. D. R.* 98 669

The author concludes from the histopathological studies of the principal types of pachymeningitis—hematoma of the dura, arachnoid cyst, and pachymeningitis proper—that neither of them has anything to do with the dura that is one of them an inflammation of this membrane is to be found and that the principal the most striking changes are confined to the pial arachnoid. The difference in the pathological findings in some cases hemorrhages in other cysts or mere thickening of the membranes is due to the etiological factors which in the form of acute infections or head injuries are responsible for the subdural hemorrhages with or without cyst formation or in the form of chronic infectious meningo-syphilis are productive of the meningo-pachymeningitis proper. E. B. Frazier

Fish H. M. and Ellis A. G. Sacromatoma of the Brain. *N. Y. M. J.* 98 839

The author reports a case of a firm mass of the brain in a woman of fifty-two. When the tumor was removed the patient had been complaining for a week of light thickening of speech and some weakness of the right arm. Since there was no evidence of arteriosclerosis, toxic pressure, or to a knowledge of a heart or kidney lesion nor of sudden loss of power it was decided that the symptoms pointed to an intracranial growth of the cerebro-syphilis.

About two months later she was admitted to the hospital in a semicomatose condition. A Wassermann blood test was negative. She died two weeks later. Postmortem examination revealed a tumor in the left parietal region of the brain. The nature was as firm and contained a thin reddish fluid apparently blood tinged serum. The general appearance was that of a solid mass that had softened and become partly fluid with small hemorrhage occurring into it. The solid portion of the mass was quite sharply separated from the brain tissue although on close inspection there appeared

no distinct capsule or similar structure separating the two.

Microscopical examination showed that the growth had no sharp line of demarcation from cerebral substance the latter was gradually infiltrated by the cells which extended for some distance into recognizable brain tissue before the latter was completely replaced by the tumor. The structure of the tumor was very suggestive of glioma which was the diagnosis provisionally made. Sections stained to demonstrate glia fibers however failed to show their presence. The conclusion is a sarcoma containing cerebral elements. F. B. Frazier

Jones W. A. Cerebral Edema. *Ann. M. A.* 98 165

Localized cerebral edema arises from various causes partly from pressure conditions and as frequent accompaniment of heart, kidney and ascular disease.

The author speculates on the mechanism of production of edema and cites the theories of various authors to the cause of localized edema.

A report is made of three cases in which a decompression operation for edema resulted in marked improvement. F. B. Frazier

NECK

Noehen A. H. Clinical Torticollis and Its Operative Treatment. With Report of Three Cases. *N. Y. M. J.* 98 868

The treatment of the chronic form of torticollis is operative. If the case is not of long standing or is very light correction without operation may be possible. In all other cases free division of the affected muscle and all contracted bands is necessary. The best result is by an open operation. The head is then brought into an extreme overcorrected position and a plaster of Paris bandage applied passing over the head and around the chest being careful to draw the head toward the opposite shoulder with the chin pointing toward the affected side. The dressing is left in place one to two weeks. If the head is not straightened and the dressing may be placed around the neck with wooden or steel trays on the affected side and left on for a week or two.

After the head is no longer fixed by dressings manipulations and systematic exercises must be instituted. Manipulations consist in forcibly approximating the head to the opposite shoulder and rotating it toward the affected side as far as possible several times a day.

The most important exercises are as follows:

Beginning with the head in the erect position (1) laterally flex the head to the opposite shoulder and return (2) rotate the head toward the affected side and return (3) flex the head anteriorly then extend posteriorly until the patient looks at the ceiling. The exercises should be taken several times a day. E. B. Frazier

Balfour D C Cancer of the Thyroid Gland
Med Rec 1918 xciv 846

The author has based his observations on 103 cases of cancer of the thyroid which have been seen in the Mayo Clinic between January 1 1910 and August 1 1918. The point of particular interest in connection with the incidence of the disease is that malignancy of the thyroid occurs only in thyroids that have undergone previous adenomatous growth. The disease is as far as experience in the clinic is concerned practically never occurs in a perfectly healthy gland or in a gland which is distinctively and typically hyperplastic.

The difficulty in early diagnosis is well illustrated by the fact that in only 18 per cent of these cases could a positive clinical diagnosis of cancer be made. In 36 per cent malignancy was considered a possibility in the pre operative diagnosis while in 46 per cent the condition was not even suspected until it was discovered during the course of operation or later by pathologic examination. This difficulty is largely due to the fact that early malignancy in the thyroid gland is unusually well concealed. In practically all instances the disease progresses from within outward and as a rule the thyroid capsule is not reached until the disease has advanced to a considerable extent. The importance therefore of early operative interference in cases of nodular goiter is particularly apparent for this reason.

Not infrequently diagnostic difficulties are found at operation particularly in broken down adenomata. The difficulties of establishing a positive diagnosis by a microscopic examination are also well shown in this study and the frequent discrepancies between surgical and pathologic record are shown. The problems connected with the surgical treatment of cancer of the thyroid are reviewed and from the experience in the clinic in the series of operative cases the points which should be emphasized are as follows:

1 The most important lesson is presented in the fact that in 46 per cent of the cases of cancer of the thyroid no clinical manifestations of the disease were in evidence. This group shows by far the highest percentage (about 70) of patients free from recurrence at the present time. In other words the great majority of apparent cures have occurred in those cases in which the malignant change was an unexpected finding.

2 In any nodular goiter suddenly exhibiting an increased rapidity of growth immediate surgical treatment should be urged.

3 When clinical evidences of cancer are present the results of surgical treatment are discouraging. Total extirpation of the gland appears to be indicated only when both lobes are grossly involved in the disease and when past experience warrants surgical interference in the particular case.

4 Recognizable involvement of cervical glands usually means that the time for surgical cure is past. Occasionally however just as the unexpected occurs in the treatment of extensive cancer elsewhere an

apparent cure is obtained. In 1913 the author moved from a patient the right lobe of the thyroid containing a malignant adenoma. A mass of gland in the submaxillary region also proved to be carcinomatous. A week later a block dissection was done. The patient is now alive and well with evidence of recurrence. Such cases are however notable exceptions to the rule.

5 Gross involvement of the trachea or oesophagus is almost a certain contra indication of curability and yet one may be tempted into an extensive and dangerous operation to remove the diseased tissue because of the knowledge of an unexpected result in the past.

6 The last and most important lesson learned from the standpoint of prophylaxis is the fact that in this series the average number of years of abnormal growth in the thyroid preceding the operation was 11.6.

Aikins W H B Radium Therapy in Hyperthyroidism with Observations on the Endocrinous System
Boston M & S J 1918 clxxix 558

Radium was first used in the treatment of the thyroid by Abbe of New York in 1905 who buried tubes of radium in the thyroid gland of an exophthalmic goiter case and produced a shrinking of the mass and cessation of the hyperthyroidism. Since then the use of radium has been directed more particularly toward pathological increases of function than toward simple glandular enlargement.

The author's experience is based on 43 cases covering a period of three years. In 3 cases he considered that a clinical cure had been obtained and 17 showed improvement. In a large number of the cases all sorts of medical measures had been tried with no avail. He quotes several others who have had less experience one of whom concludes that while radium brings about great improvement the cases do not respond so well to radium as to operation.

The endocrinous glandular system includes the thyroid thymus pituitary suprarenals pineal gland and the ovaries all of which have an intimate interdependence which tends to keep the body as a whole in a condition of equilibrium. The active principles of the endocrinous glands resemble drugs in that extracts of some of them tend to stimulate cellular function while others inhibit it. To the stimulating active principles the term hormone was originally applied and Schafer advises the limiting of its use to such action and the use of the word chalone to an endocrinous secretion tending to inhibit the activity of an organ or tissue.

The close connection which exists between the thyroid and genital organs is indicated by the much greater frequency of exophthalmic goiter in women than in men. Statistics of various investigators show it to be in the ratio of from five to one to twenty one to one. Quoting from Berry the author states that his patients with exophthalmic

ous system is in perfect correlation and function harmoniously as a whole. The ovaries naturally a part of a system to which most if not all the other endocrine glands belong and these other glands are as great a significance and these other parts of the connective tissue in relation to the female system is so intimate that the ovaries themselves reflect this correlation into appear and not only the genital system but the whole organism is affected by such an operation. The primary symptoms following a double oophorectomy the natural menopause directly depend upon the degree of femininity in the individual system especially in the individual system. By eliminating the ovarian secretory activity below the degree of femininity that maintains the disturbance one might anticipate a double oophorectomy or the menopause.

The following case of parathyroid insufficiency

The following case of parathyroid insufficiency is reported because the author has found no similar case elsewhere.

The patient a man aged forty-eight years.

under absolute rest and large doses of bromides
and when he improved slightly, but it was only
paralytic glad that to take one tenth grains of dried
was noted. He has last seen in 1914, when he
appeared in perfect health

Loeb L. Syngene lopiastic Tm
Thyroid in th
98

I E Bismar

Loeb L. Syngeneic Isoplastic Transplantation of the Thyroid in the Guinea Pig. *J. M. & R.* 98 x 114 No. 1 E. BISHOP

In a former paper the author dealt with the transplantation of organs into nearly related individual rats. While Loeb obtained very definite results in some directions certain questions as to the manner in which the transplanted tissues were destroyed in the cases named unanswered at that time. In order to complete this aspect of the work he undertook transplantation of the thyroid in the guinea pig the thyroid being an organ whose behavior after auto and homotransplantation was well known through previous experiments. He designated the transplantation as into nearly related individuals of the same species as syngenesic transplantation a term analogous to

the hyp that there is connection of the
relation of the internal secretions
Ehrlich and others who assume that
tain substances derived from internal
are present in the circulation of the
property of stimulating the body cells
cer cell. If this is true the com-
cancer in women after the menopause
currence in early adult life may be
to definite or chronic position and
The thyroid performs its function in
(1) It presides over the nutritive
its appendages and (2) has a powerful
general metabolism especially calcu-
In early life calcium salts are of
ing up the bony skeleton after puberty
cesses of reproduction and in late
bring about the pathological changes
with senility—the retention of alu-
tissues especially the arteries. The
secretions directly influence calcium
The effect of the suprarenals and
to produce retention of calcium
and tissue and other salts in the
tend to induce excretion of these
The endocrine glands play an
in the development of the genital
though the genital organs may be
morphologically they fail to become
active at puberty unless the whole of the

those used in the case of transplantation into the same animal into other individuals of the same species and into different species

The author carried out transplantation of thyroid from mother to children from sisters to brothers and in one case from child to mother. He followed the fate of the transplanted tissues during different periods after transplantation.

1. Transplantation of thyroid from mother to child. In nine experiments thyroids were transplanted from guinea pig mother to child. In seven of these cases the thyroids had acquired all the characteristics which an autotransplanted thyroid assumes at the corresponding period after transplantation. The acini consisted of relatively large cuboidal cells with vesicular nuclei and the lumen was filled with well staining colloid which usually contained no or very few cells. The acini were lying close together without being separated by connective tissue only here and there some strands of fibrous tissue partitioned the thyroids into several tracts of acini. There was no extensive fibrous mass in the center usually only a little oedematous connective tissue was found although occasionally the amount of fibrous tissue here was slightly greater than is usual in autotransplants. Only in one important respect did these thyroids differ from autotransplants. Large dense masses of lymphocytes infiltrated parts of the thyroid and destroyed certain portions of it. In some cases large in other cases smaller parts of the thyroid had been thus destroyed. The greatest accumulation of lymphocytes was usually found in the center of the thyroid. Accumulations of lymphocytes were also found in the peripheral parts of the thyroid and in the surrounding capsule but at these places they were usually smaller. Occasionally the lymphocytic masses broke through the thyroid tissue from the peripheral into the central parts. The thyroids were examined after 30, 31, 36, 37, 38, 40 and 41 days. In an additional case examined after thirty days lymphocytes were few but the connective tissue behaved similarly to cases of homotransplantation and acini were smaller than is usual in autotransplants at so late a period. In a last case in which the examination had been carried out twenty five days after transplantation the tissue behaved similarly to a homotransplant in regard to connective tissue formation and lymphocytic infiltration and size of acini but even here the result was better than in many cases of homotransplantation in which twenty five days after operation the transplant has not rarely been destroyed.

Transplantation of thyroid from guinea pig child to mother. In one case in which thyroid had been transplanted from child to mother the tissue behaved thirty days after transplantation almost like an autotransplant only very few lymphocytes were found.

3. Transplantation of thyroid to guinea pig sisters and brothers. Thyroids examined 8, 15 and 25 days after transplantation behaved essentially

like autotransplants at the corresponding period only in the piece taken out after eight days there was a very slight increase of lymphocytes over that found in cases of autotransplantation. In another case in which the transplant had been removed thirty six days after transplantation the piece also behaved like an autotransplant. In a case thirty days after transplantation the tissue behaved almost like an autotransplant but there was a very slight increase in the number of lymphocytes. In four cases examined thirty six and thirty seven days after transplantation the transplants behaved otherwise like autotransplants but showed more or less destruction of the thyroid tissue through masses of lymphocytes.

4. Control experiments. As controls of the syngenesiotransplants the author cites the experiment carried out in the laboratory by Hesselberg. In these experiments the fate of auto and homotransplants of the thyroid of the guinea pig was compared at different times after operation.

After these various findings the author draws the following conclusions.

These investigations prove that in syngenesioplasmic transplantation of the thyroid in the guinea pig the results are intermediate between those obtained after auto and homoplastic transplantation. In so far they are confirmatory of previous results obtained in the rat and with different organs. They show therefore that previous results are not limited to one kind of animal but apply also to other species and to a great variety of different organs and tissues. Loeb's present investigations however show in addition the mechanism through which the tissues are ultimately destroyed. In the large majority of cases the destruction takes place through lymphocytes in a very small number of cases the lymphocytes are absent or less prominent and an increase in the amount of connective tissue takes place. While in the former kind of cases the acini which are attacked by lymphocytes are at first in the excellent condition which is characteristic of the later periods after autotransplantation in the few cases of the second kind the acini as well as the composing cells are smaller and less active. The author finds therefore after syngenesiotransplantation in a certain sense a splitting of the two factors which in homotransplanted tissues are usually found associated with each other namely (1) increase in the production of fibrous tissue and (2) in the number of lymphocytes.

These experiments prove furthermore that in the thyroid the action of the lymphocytes is that of a destructive hostile agent and not merely that of a scavenger which invades tissues which are already in a dying condition. Without the invasion of lymphocytes these thyroids would have remained alive for a much longer period of time they might have behaved like autotransplants in certain perhaps in the majority of cases. This is the only interpretation possible if one studies the relation between lymphocytes and the acini of the thyroid. The author found acini which had the appearance of prospering auto

transplanted tissue. They are overwhelmed at places by masses of lymphocytes. The transition between the invaded and destroyed areas and the healthy areas is quite sharp, not rarely perfectly healthy acini are found containing normal colloid surrounded by masses of lymphocytes and thus separated from neighboring acini cut off from contact with the surrounding blood vessel.

From these experiments the author has made the following summary:

1 After syngenesioplasmic transplantation of thyroid in guinea pigs the results obtained are intermediate between those obtained after aut and homotransplantation. These findings agree with previous results obtained in the rat and with different organs.

2 After syngenesioplasmic transplantation the thyroid behaves in the majority of cases for a certain period of time like an autotransplanted tissue but in most cases gradually an intense lymphocytic

infiltration takes place which secondarily destroys the healthy acini. Changes in the cell metabolism must be assumed as the cause of this lymphocytic reaction. These experiments are a further proof of the role of the lymphocytes in the destruction of tissues under the influence of syngenesio- and homotoxins. In a smaller number of cases of syngenesioplasmic transplantations the fibrous tissue also is increased, the fibroblasts behaving similar to the fibroblasts in cases of homoplastic transplantation. While in these latter cases the lymphocytic infiltration may be relatively diminished in intensity the acini are usually not so well preserved as a result of pressure by fibrous tissue.

3 The rapidity with which the transplants attract lymphocytes in various kind of transplantations is graded and these gradations correspond to the gradations in the relationship between cell products and constituents of the body fluids in donor and host.

GEORGE E. BERL

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Pritchard J. S. Physical Examination in Diseases of the Adult Chest. *Medical Topics* 1919, 19, 29.

The author discusses the various methods which have been devised in the endeavor to determine and differentiate pathological conditions in the chest. He states that nothing new has been added to the procedure in chest examinations that is of much value with the exception of fluoroscopic observations and the interpretation of stereoscopic roentgen plates. This procedure however is of extreme importance and no chest examination is complete without a careful fluoroscopic screen examination and a stereoscopic study.

He then discusses and enumerates the findings obtained by a careful examination of the chest using the routine well established steps of inspection, palpation, percussion and auscultation.

The following conclusions are drawn from a study of 734 cases:

1 Some abnormality was found in most cases.

2 Both forms of examination, clinical as well as roentgenological, are essential in order to secure the maximum amount of information. Opinions given separately may in many cases be sufficient but in doubtful or borderline cases both should be combined. The X-ray examinations should include both fluoroscopic studies and stereo plate interpretations. These procedures should therefore be included as a routine measure in all cases.

3 Where lesions exist stereo plates as a rule will reveal more pathology than a physical examination.

4 Clinicians should not belittle the value of the X-ray and roentgenologists should not be too positive as regards the significance of a shadow in

the face of apparently contradictory clinical evidence.

5 Roentgen examinations to be of value should be conducted and the shadows interpreted by physicians who have considerable experience in such work.

6 Fluoroscopic examination should not be neglected when stereo plates are studied.

Single plates give only part of the information obtained from stereo plates and should never be used when it is reasonable to obtain the latter.

8 In suspicious metastatic pulmonary malignancy the roentgen stereo should be frequently repeated.

9 In the examination of children under six years the stereo plates or even the single plate give more information as regards the presence of pulmonary pathology than is obtained by any other method.

10 If the same person makes both examinations he should as Dunn suggests be careful to record his findings in writing after the completion of each examination.

11 Destructive changes are revealed more frequently and shown more clearly by roentgenology. The only auscultatory sign of cavity formation in many cases is the grouping.

12 The author agrees with Pancoast in stating that often sets of stereo plates are necessary, one in the anteroposterior and one in the posterior-anterior aspect, especially in the case of mediastinal tumor, malignancy or Hodgkin's disease.

13 There is no specific shadow characteristic of recently active tuberculosis as venous congestion, certain types of bronchitis and decubitus of upper respiratory infections will often cause similar shadows.

H. H. FRENCH

Blair R B and Shattuck G C Penetrating Wounds of the Chest *J Roy Army Med Corps* 1918 xxii 177

The authors report the results of the treatment of penetrating wounds of the chest at a casualty clearing station between July 31 and October 1 1917. The conclusions are

1 Indications for operation can be clearly defined but will be modified as future experience suggests

Open pneumothorax should be closed temporarily by skin suture at the earliest possible moment

3 The size and location of the missile as well as its nature should be accurately determined before operation

4 When thoracotomy is to be performed and the chest closed the operation should be undertaken with the least possible delay but with due regard to the general condition of the patient. The object is to remove the source before the infection becomes established

5 It seems probable that when known intrathoracic infection has not become localized the chest should be closed and drained later when necessary and that primary drainage should be reserved as a rule for cavities of a moderate size

6 The hæmolytic streptococcus is one of the most dangerous organisms. The gas bacillus unless combined with other organisms has proved less dangerous

7 Cases of thoracotomy if possible should remain at the casualty clearing station for two weeks or more after operation

8 Gas and oxygen is the best general anæsthetic for chest cases

9 Careful management both before and after operation is important

10 The use of morphine when indicated is of great value both in the pre and the postoperative periods

11 Close co-operation between surgeon, physician and radiologist adds materially to the success of the work. L B FREILICH

Meakins J and Walker T W The After Effects of Wounds of the Chest and Their Treatment *Cand Med J* 1918 viii 910

The authors report their observations based on 10 cases admitted to the hospital during the latter six months of 1917. Their conclusions are

1 Deformity of the chest wall is a very important disabling after effect of gunshot wounds of the chest

2 This deformity follows most frequently prolonged involvement of the pleural cavity

3 The early and persistent evacuation of fluid from the pleural cavity either by aspiration or by operation is of great importance in preventing the development of the deformity. Especially in the cases of hæmothorax

4 The early use of special exercises is beneficial in preventing or overcoming this deformity

5 The prognosis in this condition is exceptionally good under suitable treatment

E B FREILICH

Grégoire R and Bergonié J Localization and Extraction of Intrathoracic Projectiles by the Electro Vibrator Method *Tr Assoc française de chirurgie* Par 1918

The results of the X ray methods of localizing intrathoracic projectiles and their use during extraction are well known and too definite to admit of criticism. The electro vibrator is not intended to supplant the X ray but rather to supplement it. It is a further means of facilitating the search for and the extraction of intrathoracic projectiles

Although the authors have often protested against the early systematic extraction of all intrapulmonary projectiles they are nevertheless convinced of the necessity of late extraction i.e. after cicatrization of the traumatic lesion. This intervention offers none of the risks of early extraction. With few exceptions all intrapulmonary projectiles ought to be removed and thus it is necessary to use all means of arriving at this result

In the case of a foreign thoracic body there are two processes its exact localization and its extraction. For locating the X ray usually suffices but even here the radiologist may at times admit that the electro vibrator may be of use. The vibrator is however of particular use during the extraction; it takes the place of the X ray and it is here that it interests the surgeon. Extraction with the aid of the electro vibrator is more practical than extraction under fluoroscopic screen control or with the use of the compass

There are some limitations due to the kind of metal composing the projectile and its size and depth. Magnetic bodies alone can be located by this method and if too deeply embedded even these may not set up oscillations in the instrument

Practically intrathoracic projectiles come to the surgeon under one of two conditions they are either superficial i.e. in the pleura or near the surface of the lung or they are deep i.e. situated in the midst of the parenchyma or in the region of the pulmonary pedicle. If the projectile is superficial its location with the vibrator is definite and very easy. Extraction offers no difficulties the intercostal space is incised the rib dissected at the vibrating point and usually the projectile is found and removed immediately

With a deeply embedded projectile the extraction differs according as the lung is free or adherent. When the lung is free after incision and dissection of a rib on the level of the vibrating point the thorax is opened and surgical pneumothorax induced. At this moment owing to the collapse of the lung it frequently happens that vibrations are no longer felt because the projectile is removed to a distance from the vibrator. But the projectile is easily found again by palpating the lung or by employing a new apparatus invented

by one of the authors which permits the projection of the electro-plate into the bottom of the wound. This consists of a sterilizable magnetic piece formed of a bundle of wire enclosed within a covering of non-vibrating metal. The apparatus applied on the pleural electro-vibrator extends the vibrations and can be brought into contact with the projectile.

When the lung is depressed it is held at the point where the vibrations are felt; if necessary, the sterilizable prolongation is introduced into the incision and the finger is thus guided to the projectile. It is particularly in the case of the electro-vibrator that the best results are obtained with the compass, the least displacement of the probe immediately causes a deviation of the needle which is so much the greater and hence more fatal; the projectile is deeper than it appears to be and need to be searched for with greater precision.

In conclusion, in the extraction of interapical projectiles, the electro-vibrator has its place in addition to the methods which utilize the compass and the X-ray. It does not require geometry nor calculations. It gives direct information to the surgeon himself and he operates with it in full daylight. Sea-chief projectile can be prolonged as much as necessary; there is neither danger nor inconvenience to the patient to the surgeon or his assistants. W. A. BRENNY.

Gray H. M. W. Surgical Treatment of Penetrating Wounds of the Thorax. *M. d. P.* 98 c 83 3 3

From the clinician's point of view chest wounds are divided into four classes: (1) cases which do not require operation; (2) cases which demand operation at the earliest possible moment; (3) indefinite cases making decision as to immediate treatment a very difficult matter; (4) moribund cases.

All cases should be rapidly examined, put to bed in a semi-recumbent position, warmed and kept quiet. If an open sucking wound is present it should be made airtight by suture, rubber gauze plug fixed with broad adhesive straps. This simple procedure often stops alarming symptoms. A sufficient hemothorax or hemothorax may produce severe respiratory distress. A rough foreign body or fragment of rib irritating the pleura or pericardium may produce persistent severe pain. If the foreign body is in the lung it produces no pain. Intense dyspnea may be due to the diaphragm being injured or irritated by a foreign body. Increasing respiratory distress may be due to an increase in the hemothorax or blood clot infected with the gas-forming bacillus.

The earlier sepsis develops the more serious it is apt to be. Sepsis is the cause of death in most of the sucking wounds. The degree of sepsis is dependent upon the size and nature of the missile and the size of the entrance wound. Patients with small entrance wounds who survive until they reach the casualty clearing station usually recover from their initial

symptoms very quickly but must be closely watched. In any case of hemothorax if the high temperature, rapid pulse and rapid respiration do not become better after twenty-four hours the exploring syringe should be used and the fluid tested bacteriologically. Crimson purple color of froth and foul smelling gas are sufficient proof of anaerobic infection. The test should be made every day or every other day, as sepsis may develop in islands of the clot or fluid not tapped by the needle. Increase of the pneumothorax or development of resonant patches in previously dull areas should make one suspicious of gas infection. During the first three days aspiration may be required at any time in order to relieve distressed respiration. Aspiration of a large quantity of fluid may start hemorrhage and if urgent symptoms develop again a large opening should be made in the chest. All the pleural cavity cleared out, the source of the hemorrhage found and controlled, then the opening should be completely closed. In the doubtful cases blood transfusion in the early stages will lead to better results and permit a successful radical operation on a greater number of intermediate cases.

In severe open wounds operation is performed with a five-fold dressage to tide the patient over the acutely dangerous period brought on by hemorrhage, collapse of the lung and displacement of organs and to prevent sepsis from getting a hold. Mere closing of the wound will accomplish the first but thorough excision of the lacerated tissue and removal of blood clot and foreign bodies are essential for the accomplishment of the latter. Extensively lacerated wounds with clothing and infection carried in are the first and most frequently prove fatal. Sucking and tangential wounds are the least dangerous.

An X-ray should always be taken before any operative procedure is instituted. For anesthesia nitrous oxide and oxygen is the one to be preferred; ether should never be given if it can be avoided. If the wound is high up on the chest or in the axilla the body of the scapula a fresh wound should be made in the region of the fifth rib below the axilla. The opening should be large enough to admit the surgeon's hand. Five inches of the rib may be removed if necessary unless others are injured which require removal. The original wounds are closed en masse—skin, muscles, bone and edge of pleura in one piece. The edges of the wound are now strongly retracted by a self-retaining extractor. The fluid is syphoned off or poured out, blood clots scooped out with the hand and a rapid survey made of the internal organs.

The lung is secured, pulled out and the foreign body or pieces of bone removed, bleeding stopped by suture, cautery, rubber gauze plug and dangle or badly lacerated lung tissue is excised. A cotton glove on the hand makes the handling of the lung easier. Foreign bodies in the mediastinum or bodies of the vertebral column may be removed using the chisel if necessary.

If the diaphragm is injured it should be repaired first, opening the chest cavity. If the periphery of

the diaphragm is affected it may be sutured air tight to the chest wall and it is astonishing to what height and at what tension the diaphragm can thus be sutured. If there is injury to abdominal viscera the chest wound must be entirely closed before the abdomen is opened.

If there are multiple injuries of the body the sucking wounds must be attended to first. Routine aspiration of the fluid in the pleural cavity every twenty four to forty eight hours is a postoperative measure is essential. If infection appears and severe constitutional symptoms arise a drainage operation should be carried out. P W SWEET

Goodwin C G R and Coley F C Two Cases of Artificial Pneumothorax *Brit M J* 1918 ii 405

In the first case related by the authors the patient showed advanced phthisis with signs of cavitation in the left upper lobe hæmoptysis profuse night sweats and great loss of weight. The outlook was very gloomy. Artificial pneumothorax was induced and continued for nearly two years. The patient has been enabled to resume his usual work for a full year. He rarely coughs and his capacity for exertion steadily increases.

In the second case the patient also showed signs of cavitation in the right upper lobe. A most obstinate diarrhoea suggested tuberculous ulceration of the intestine. The induction and upkeep of artificial pneumothorax gave excellent results. The patient has resumed full work but there is still slight cough and expectoration.

The authors claim a valuable success for induced pneumothorax if it obtains as in these cases a prolongation of useful and comfortable life for the patient. W A BRENNAN

Delorme E Pulmonary Decortication In the Traumatic Pleuritis Following War Wounds (De la décortication pulmonaire dans les pleurésies traumatiques consécutives aux blessures de guerre) *Bull Acad de méd* Par 1918 lxxx 401

Delorme reviews the reports which have been published concerning pulmonary decortication in established empyema following war wounds. He refers especially to the work of Duvergey who operated upon 35 such cases. These cases were on the average fistulous for five to ten months and in about two thirds of them several complementary operations more or less extensive resections had been done without any success. These cases were divided into three groups (1) those showing no fever and well drained (2) those badly drained and subfebrile (3) those with bronchial fistulae.

In the two latter groups the temperature is brought to normal by a prior pleurotomy before decortication of the lung is attempted.

From his wide experience Duvergey became convinced that spontaneous and definite closure of pleural fistulae following thoracic wounds was not to

be expected if they existed more than five months. They must be operated upon.

Altogether Delorme finds 49 cases of pulmonary decortication for chronic empyema reported by war surgeons without a single death which could be imputed to the operation itself. The most pronounced successes have been obtained when the patient was non febrile and in good general condition. Shock is rare. Pulmonary hæmorrhage is generally insignificant and to avoid possible complications it is well to operate in a room kept at a temperature of from 20 to 25°. Recovery which is definite in the majority of cases is obtained in from six to eight weeks.

Delorme draws these conclusions from a study of the results reported.

1 Pulmonary decortication is the operation of choice in chronic empyemas showing total large or medium sized cavities.

2 Its value in the traumatic pleuritis following war wounds has been established by the cases reported.

3 It is not dangerous. It is especially successful in young resistant patients who are not exhausted by suppuration who do not show any pulmonary renal or hepatic abnormalities and in whom the cavity has been early disinfected. The operation promises equal success in patients with chronic pleurisy subsequent to gripal infections.

4 Its indication with regard to time is precise. It ought to be done when the lung is seen to be powerless to overcome the resistance of its enveloping shell. Radiography especially furnishes the proof of a definite fixation.

5 In timely operations pulmonary decortication is easy in the majority of cases and as a result it permits an immediate expansion of the lung.

6 In reporting the history of this operation the cases ought to be divided into two classes: those whose study and time period is uncertain and those the actual period of which is known. The latter only should be considered in studying the value of pulmonary decortication. W A BRENNAN

Comblair V and Hertz J The Early Treatment of Septic Pleural Effusions Complications of Penetrating Chest Wounds (Note sur le traitement précoce des épanchements septiques de la plèvre complications des plaies pénétrantes de poitrine) *Lyon chirurg* 1918 xv 311

The authors give histories charts and illustrations of 15 cases of chest wounds with later septic pleurisy which they treated by early thoracotomy followed by secondary suture after establishing an aseptic condition of the pleura. This treatment includes the emptying disinfection and closure of the pleura and the early mobilization of the lung.

The details of technique recommended are local anaesthesia resection of a few centimeters of the ninth rib puncture being previously performed at the level incision of the pleura without fear of pneumothorax the innocuity of which recent war

surgery has demonstrated evacuation of the septal effusion and minute cleansing of the whole pleuritic area including the removal of false membranes two rubber tubes are then placed in the pleural cavity and fixed to the chest wall by silk worm gut and an adherent India rubber plate one of these tubes is for the evacuation of the pleuritic secretions etc the other an sers for intermittent irrigation with Dakin's solution

The patient generally improves immediately and the temperature is soon observed to be normal By the fourth day after operation the tubes can generally be withdrawn and the thoracic wall sutured The day following the patient may commence mobilization of the lung by respiratory exercises

The results obtained by the authors following this treatment were excellent Elimination of the patients after about three weeks on an average showed the thoracic wall not collapsed mobile and painless with normal breathing in the whole lung and without pleural symptoms There was only death due to double pneumonia W A B 44

Roux Berger J L Four New Cases of Total Pleurectomy for Pleural Infection with Pachypleuritis (Quatre cas de pleurite totale avec pachypleurite)
L3 4 9 8 33

The authors describe the full details of fifteen cases of complete pleurectomy practiced on wounded soldiers for pleural infection with pachypleuritis His original method was published some months ago

These four cases occurred after incomplete primary operations in which the existence of an intrapleural shell splinter had been overlooked The patients were in very bad condition with suppurating fistulae two of them having bronchial fistulae

Two of the patients were operated upon in two stages at intervals of three and a half weeks The first operation requires a large costal resection with excision of the fistulae removal of the projectile remnant the cutting away of the thickened part of the parietal pleura and a careful cleansing of the whole pleural cavity followed by drainage and regular irrigation with Dakin's fluid until a sufficient sterilization of the cavity is obtained

The second operation includes removal of the neoformed osteoblastic masses the decortication of the lung immobilization and retraction in a rigid fibrous coat which must be excised as completely as possible and followed by the fixing of the freed lung to the chest wall This pneumopexy prevents the formation of new sacs and the recurrence of lung retraction Finally the chest wall is entirely sutured leaving only space for a drain

In the one stage operation which was followed in two of the cases all the above procedures were carried out at the first intervention

Respiratory exercises are resorted to immediately after the patient is fit for them

Three of the four patients were discharged completely cured without recurrence of fistula in the fourth a small pleural fistula persisted The cure is anatomic not a complete physiologic recovery

From his personal experience the author warns of the danger from the presence of an infected piece of projectile in the pleura and points out the advantages of as extensive a pneumopexy as possible the better the fixation the better the results

W A L ENNAN

TRACHEA AND LUNGS

Jackon C A New Diagnostic Sign of Foreign Body in the Trachea or Bronchi (The Asthmatic Wheeze)
J M S 9 8 cl 65

The author describes a wheezing sound heard during expiration when the examiner places his ear before the patient's open mouth or often detected during mirror examination of the larynx The wheezing resembles that heard in asthma but has a different quality and is best heard after coughing out all secretions It is produced by air passing between the foreign body and the bronchial or tracheal wall and was heard most often in the cases where angular foreign bodies but partly obstructed the lumen of the air passages The author designates the sign the asthmatic wheeze and has found it of great value in deciding the question of whether to do or not to do a bronchoscopy in cases of suspected foreign body where the roentgen ray failed to give evidence of its presence

The sign is said to have no localizing value in determining which lung holds the foreign body but a flatter note was observed in a case where the foreign body had lodged in the trachea

A typical case is reported in which the decision to do a bronchoscopy was based on the presence of the asthmatic wheeze and an angular piece of soup bone was removed from the right bronchus It had failed to evidence itself in a thorough radiographic study The author requests that the sign be tested for and recorded in every case of foreign body in the air passages in order statistically to determine its value

May E The Endobronchial Treatment of Bronchiectasis and Bronchial Abscess
M J 9 8 666

The author presents a preliminary report on the endobronchial treatment of hypersecretion in the bronchi The method of treatment is as follows A hypodermic of half a grain of morphine and atropine should be administered half an hour before treatment is begun followed by thorough cannulation with cotton applicators of mouth tongue pharynx and larynx from ten to twenty per cent

The patient should lie on his back with his head supported by a trained assistant The bronchoscopic tube inserted and a spray of two per cent cocaine and adrenalin thrown into the bronchus to allay coughing The successive section in the bronchi

is then withdrawn through the tube by the suction apparatus and ten ounces of warm salt water slowly introduced through the inner tube is at once withdrawn through the outer one.

This method is to be used in the first or second bronchoscopy. The patient showing no intolerance to the introduction of the fluids finally receives a solution of iodine and carbolic acid (10 drams two drams carbolic acid fifteen mm to one pint of water) in place of the salt water. This method of treatment was repeated twice weekly in each case.

The results of this treatment are almost complete cessation of odor a diminution in the amount excreted and a very decided improvement in the physical condition of these patients.

E. B. FREILICH

Grégoire R. Partial Resection of the Lung for Abscess (*Réséction partielle du poulmon pour abcès*) *Bull et mém Soc de chir de Par* 9 8 xlv 1435

A soldier who had received a bullet wound in the vicinity of the fourth right intercostal space after recovery without operation returned to the hospital later with symptoms which clearly pointed to an abscess formed around a projectile which radio-

scopy showed to be embedded in the right lung and moving with respiratory movements.

Since he was not certain from the conditions found after opening up the area that he could avoid infection in the neighborhood of the pleura Grégoire incised the lung parenchyma entirely around the abscess as far as it seemed to have been contaminated and removed the abscess and part of the lung together. The curvilinear section of lung removed measured about 6 by 6 to 7 cm.

The lung was returned to its cavity and the edges sutured. The man recovered. Later radiography showed a slight opacity at the base of the right hemithorax and a little fluid but so small as not to call for puncture. Pneumothorax was observed for a few days following operation. It was easily evacuated by the trocar.

In this case of resection the lung was quite free from adhesions which is an exceptional circumstance. The location of the abscess on the lower lobe was also a favorable factor.

The fact that the hemorrhage on cutting the lung tissue was not alarming confirms the experimental results obtained on dogs by Courcoux. It is only when the section is large and toward the central part of the organ that hemorrhage is excessive.

W. A. BRENNAN

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Létulle M. Syphilitic Peritonitis as a Frequent Cause of Ascites in Cirrhosis of the Liver (*La péritonite syphilitique cause fréquente de l'ascite dans les cirrhoses du foie*) *Bull Acad dem d Par* 1918 lxxv 209

The experience of the author leads him to believe that in addition to the sclerogummatous lesions properly so called there exists also a veritable alcoholic syphilitic cirrhosis. The pathologic lesions are so clear that they admit of the recognition of a characteristic differentiation. Two clinical facts also support this contention namely that in a remarkable proportion of cases of apparently simply developed hepatic cirrhosis the Bordet Wassermann reaction is positive and also that improvement follows in such cases under anti-syphilitic treatment.

The author's arguments are based on the study of 10 cases. These studies were not preconceived but were made in the course of his researches on ascites and alterations of the peritoneum in cases of chronic hepatitis. In the 10 cases studied there were in all material and extensive lesions of the peritoneum. All these cases had given a positive Bordet Wassermann reaction during life.

The macroscopic and microscopic peritoneal alterations found are described in detail and illustrated. In a general way the findings show that when the syphilitic spirochæte colonizes in the

thickness of the peritoneum the changes which take place comprise a lymphocytic hyperdiapedesis sometimes diffuse and sometimes follicular with a pervascular predominance. The serosa is often irritated through its entire thickness tumefies and shows disseminated isolated giant cells forming specific elementary follicles. These follicles are surrounded by vitreous epitheloid and plasma cells and attract a flow of lymphocytes forming a more or less regular crown. As the morbid process continues a regular miliary gumma is formed a conglomerate of primary follicles. The progress of the disease takes the form of gummatous infiltration. The author thinks that certain conclusions may be deduced from his study.

1. The peritoneum is frequently the location for cultures of the syphilis spirochæte.

Habitually syphilitic peritonitis is secondary to a liver inflammation when this latter is a sclerogummatous specific hepatitis or even as is perhaps more frequent a simple diffuse cirrhosis wrongly considered to be due alone to alcoholic excess.

3. Secondary syphilitic peritonitis can become generalized to all the extent of the serosa but usually it is circumscribed to one or several regions.

4. Whatever the extent of these lesions may be or the form or microscopic appearance the integrity of the organs which the peritoneum protects is respected for a long time but the deformities and atrophic mutilations suffered by the membranous

field of the splanchnic peritoneum given to connect which are in the presence of abdominal pathology to be recognized and eliminated.

W A B NMAN

Land y L H Tl Inguinal Approach in the Cure of Femoral Hernia *N O I M & S J* 98 L 1 235

While there have been comparatively few methods advocated for the cure of inguinal hernia the number of procedures advocated as a radical cure for femoral hernia is appalling. This fact in itself is quite an argument the author says against the statement that the cure of femoral hernia is a simple procedure.

Didier in 1912 presented an exhaustive work on the subject containing an index of 8 public t. In 1907 Moschoitz found several methods and modifications advocated for the radical cure of femoral hernia. His procedure varied from median laparotomy and ligation of the ring from within (Widenham M. Ellis) to a simple high ligation and external fixation with attempt to close the ring (S. C. S. M. T. L. Banks 1893) (Ochsner 1903) to myoplastic tenoplastics osteoplastics and bone graft.

The inguinal approach in femoral hernia as first advocated by Annandale (1866) Zuckerkandl (1883) advocated the inguinal route in a unilateral hernia. Later this method was taken up by Ruggi (1890) Parlaecchio (1893) Tuffier (1896) Codivilla (1898) Gordon (Dublin 1900) Cuibeni Prist (1904) Dujarier and Demarest (Paris) and many others.

Moschoitz in 1907 published a technique in America giving full details of closing the femoral opening from above after high ligation of the sac by suturing Poupert's ligament to Cooper's ligament. Seelig and Tuholke have gone far to popularize this method in the United States by publishing an excellent article on the subject in *SURGERY, GYNECOLOGY AND OBSTETRIC* 1941 which fully describes the technique and illustrates it.

The author has used this method in a series of under 100 cases with a 95% success rate and submits the following conclusions:

The operation is probably longer than by the ordinary crural route in so far as a femoral hernia and an inguinal hernia combined is done but these added advantages: (1) A clear and distinct exposure of the anatomical field; (2) High ligation of the sac; (3) secure ligation of the femoral ring; (4) accomplished; (5) the second or abdominal incision is not necessary (as is indicated by many authors when the crural route is employed) if a strangulated hernia is found.

Kelly F A Inguinal Hernia *J Am I & H M* p 98 x 55

Kelly discusses the use of local anesthesia in operating upon inguinal hernia. It is his belief that

all indirect and many direct inguinal hernia are potentially congenital and that the point of exit of the spermatic cord is a potential weak spot and therefore a potential factor in recurrence after operation. In dealing with indirect hernia therefore the cord should be left beneath the deep sutures and allowed to emerge at the lower angle next to the pubis. In this way a potential weakness is transferred at least three inches away from the inguinal ring. In dealing with a direct hernia where the weak spot is of position or near the external ring the cord should be transplanted anterior to the deep suture line bringing it out at or near the internal ring thus transferring again a potential weakness a considerable distance.

The treatment of the stump of the sac is a very important matter. In tying off the sac a dimple or depression is created to be left at that point and this dimple or depression is a starting point for recurrence. Therefore the stump of the sac should always be transplanted some distance from the original location and hence from the location of the pre-ent hernia thus doing away with the danger of recurrence.

The author believes that as good an operation for inguinal hernia can be performed with a local anesthetic as a general. The operation is quite superficial and the principal nerves are easily isolated and infiltrated. He advocates the preservation of the nerve supply to guard against a postoperative weakness of the muscle supply of the external ring.

All cases are suitable for local anesthesia. A badly inflamed nerve and postoperative error in hernia are difficult with local anesthesia also though complicated from the use of so-called injection cure. It should be borne in mind that under local anesthesia one may cut a nerve or burn but cannot pull. Therefore sharp dissection must be used.

It has been the author's experience that there is a larger percentage of primary healing in local than in general anesthesia in the groin but that the tissues retracted with more ease handled less traction is immediately evident in the groin and the nerve is immediately relaxed.

From his own experience a subject for local anesthesia is a serious impossibility to operate on anesthetized in this area.

C W Hoc

Wint R D T Jr A Simple Operation for Double Inguinal Hernia One Incision *J M S N J* 98 34

A three or four median incision just above the pubis carried down through the skin and superficial fascia which is epiaurated from the aponeurosis of the external oblique muscle in the groin. The poneurosis is split the full length of the inguinal canal. The cord is then elevated from the canal the hernia is reduced and the sac separated ligated and removed. The cord is held to one side and the poneurosis of the external oblique is sutured to the upper part of the inguinal ligament. Without making

a new incision the same is done on the other side. The skin is then closed by any of the usual methods.

The advantages are rapidity, accessibility, the absence of an anesthetized area of skin in the lower abdomen due to the cutting of the filaments of the iliohypogastric and ilioinguinal nerves. A double or single hydrocele or varicocele can be done through the same incision if necessary. There has been but one reported recurrence in about 400 operations by this method. F P HAMMOND

Gallo A Mesenteric Disinsertion in Strangulated Herniæ (Desinserción mesentérica en las hernias estranguladas) *Semana Méd* Buenos Aires 1918 xxx 553

In Gallo's patient who was operated upon for a strangulated crural hernia the mesentery of the herniated loop of intestine was found to be disinserted for an extent of about 45 cm. The disinsertion was parallel to the mesenteric edge of the intestine and involved both mesenteric flap. Resection of the intestinal loop for about 50 cm and an end to end anastomosis was done, an uneventful recovery following.

The author states that few cases of mesenteric disinsertion in connection with strangulated hernia are found in literature. Besides his own there are but 9 cases recorded, 7 of these herniæ were on the right side, 3 on the left, 5 crural and 5 inguinal. Guibe, who collected the cases, thinks that the last portion of the ileum is the usual site for this complication.

Any pathologic condition which diminishes mesenteric resistance may be a predisposing cause, also taxis may aid as well as the tension of the mesentery itself. There is no special symptomatology. The prognosis is grave and calls for resection of the intestinal loop deprived of its mesentery and blood supply. W A BRENNAN

GASTRO INTESTINAL TRACT

McClanahan H M A Brief Report of an Infant with Congenital Stricture of the Duodenum Operation Death *Arch Ped* 1918 xxxv 533

A case of persistent vomiting in a newborn infant is briefly reported. There was no mass palpable in the abdomen. Not all food was vomited but bile was constantly present in the vomitus. Partial obstruction was diagnosed and operation resorted to when the patient was one month old.

The pathology is of interest. The stomach was greatly distended. The pylorus was moderately constricted by a circular induration but the obstruction was not complete. The upper eight inches of the duodenum were greatly dilated. At the point where the duodenum passed through the transverse colon a constricting band belonging to the mesenterum was found. This was divided and the distended duodenum at once emptied itself.

LISTER TUHOLSKE

Boidi Trotti G A Case of Interposition of the Intestine Between the Diaphragm and Liver (Considerazioni su di un caso di interposizione dell'intestino fra il diaframma ed il fegato) *Gior d r Accad di med* Torino 1918 lxxv 56

The interposition of a tract of intestine between the diaphragm and liver, a species of hepatoptosis, has occasionally been noted radiologically or found at autopsy or operation.

The author reports a case in a man of fifty years who had gastric disturbances for which a radioscopic examination was made. A juxtapyloric ulcer was found with dilatation and gastric atony. During the examination it was observed that instead of the characteristic dark shadow of the liver on the right side of the abdomen there was a large clear space, the situation and peculiarities of which suggested an intestinal segment distended with gas.

The shadow of the liver appeared toward the middle part of the abdomen. Palpation verified the radioscopic findings. The radiologic picture was that of an intestinal segment between the liver and the diaphragm. Such a condition is generally transitory but in this case it was apparently permanent as an examination six months later showed exactly the same condition. The case did not however come to operation so that the actual facts could not be verified.

The author reviews the literature. The best explanation of the phenomenon seems to him not an anomaly of the situation of the liver but rather the result of organic and functional alterations of some parts of the gastro intestinal tract. This explanation would satisfy the conditions in most of the reported cases in which there were usually gastro intestinal disturbances with gaseous distention and endo abdominal pressure.

When there is some anatomic deformation of the liver the condition is likely to be constant although transitory in the opposite case. In the cases revealed by autopsy in which evidently there was some degree of permanency it was generally an anomaly of form rather than of position of the liver that was found. Therefore many cases have been wrongly described as migration of the liver or a hepatoptosis.

W A BRENNAN

Shaw H A Partial or Incomplete Intussusception as an Etiologic Factor in Untoward Postoperative Sequelæ Following Appendectomy *Northwest Med* 1918 xvii 283

As prophylaxis against incomplete intussusception due to change of position of the ileocecal valve certain technical considerations should be emphasized. It is well to keep in mind the normal anatomic arrangement in and around the ileocecal region as frequently from either embryologic defect or pathologic change there is already altered structural relations which could easily be converted from a harmless to a crippling condition.

First free the appendix close to its confluence with the cæcum.

Second where ligation of the mesoappendix by the Watkins or any *en masse* method seems to change the ileocecal angle or drag the ileum and the internal terminal caecal sacculi closer together it could be best to use fine multiple ligation close to the appendix.

Third if purse string is used arrange it so that it will not engage either the ileocolic or ileocecal fold the cecum more deeply in approximating the ileum in the cæcum or changing the angle of entrance.

Fourth knowing that a cæcum mobile is often associated with intussusception a cæcoperitoneum would be indicated in the e cases and for the same reason a shortening of any markedly elongated terminal ileum mesentery.

The author reports a case. EDWARD L. C. N.

Gangitano C. Four Cases of Ileotyphlocolic Intussusception Treated by Vaginal and Lateral Ileocolotomy (Quattro casi di intussusceptione ileotyphlocolica trattati col metodo vaginale e laterale). *Chirurgia* 1908, 47.

The author operated upon four cases of ileotyphlocolic intussusception in patients ranging from thirty-seven to fifty-four years old. In all these cases in the ileocolic segment the following conditions were found: (1) The last portion of the hypertrophied ileum had a very long mesentery which continued with the mesoecum; (2) the cæcum was mobile and dilated; (3) there was abnormal mobility of the invaginated colon. The author thinks these conditions have to be present to produce intussusception.

It has been stated that intussusception is more frequent in children than in adults. The author's experience is to the contrary. In children the cæcum is more mobile than in adults; the megalo-cæcum is more rare and the latter condition is accompanied by great mobility of the sigmoid. In adults the more usual cause is intussusception of the polyp but the cause in children may be different.

In the treatment reduction is insufficient because it does not prevent recurrence. Cæcoperitoneum may prevent recurrence but the surgical methods at disposal do not obtain a stable cæcoperitoneum. Esection of the invaginated tumour which is the true radical procedure is a long and dangerous operation which is not justifiable because other means of accomplishing the desired end are available.

The author prefers lateral ileocolostomy uniting the ileum to the transverse colon. This method has been applied by many surgeons in cases of mobile cæcum but it should also give an ideal result in cases in which its action upon the ileum put it in wide communication with the ileum freeing the latter from its heavy weight in pushing the faecal material from the abnormal cæcum. It makes recurrence impossible the terminal portion of the ileum being fixed between Bauhin's valve and the new anastomotic mouth. It elevates the cæcum and ascending colon forming a large part of the faecal

material which follows another route with less risk of stasis in these organs. The operation is not dangerous in the hands of a skilled surgeon and is quickly executed. The author has used it in a large number of cases of enteroanastomosis and has never lost a patient. He always sutures with the Murphy button of which he has been an advocate for many years. The anastomotic opening is made very large from 8 to 10 cm.

W. A. BR. A.

Horsley J. S. Resection of the Cæcum and Ascending Colon. *Transactions of the Society of Surgeons* 1908, 98 D, 100 B.

The author discusses the underlying causes of the abandonment of lateral intestinal anastomosis and the adoption of the end-to-end method. Cannon and Murphy have shown that in animals with the end-to-end method the anastomosis of food at the site of operation hereinafter lateral anastomosis peritonal anastomosis does not prevent the bowel from uniting.

Horsley calls attention to the triangular space at the mesenteric border of the intestine which is sometimes noticed by the operator before it is closed and to the necessity of clearing the bowel ends with antiseptics before suturing. He believes that a valve should be made when the small bowel is united to the large. He describes a new operation based on these principles in which the end-to-end method is used and the ileum projected into the end of the transverse colon and sutured in a manner similar to that used in his method of uniting the small bowel. In addition to this in order to promote valve formation and decrease safety there is placed a row of interrupted mattress stitches of catgut. To relieve gas accumulation he suggests an enterostomy after the Coffey principle.

He reports seven cases of resection of the cæcum and ascending colon in which he has done duodenal jejunum anastomosis. All of these patients recovered from the operation without fatal results. Two of the operations were performed on patients with tuberculous enteritis. In one of the cases of tuberculous enteritis there was a resection of several feet of diseased ileum after the cæcum and ascending colon had been removed thus making a double resection in this case.

Horsley has recently done another resection of the cæcum and ascending colon with the technique described including the valviform anastomosis and the enterostomy. At the present time five days after operation the patient is doing well. The peritonitis has not been observed. There has been no death.

Blanchard F. A. Person I. Case of Appendicular Calculus Revealed by the X Rays. (Unguento per il calcolo appendicolare). *Rivista di Chirurgia* 1908, 918, VIII, 599.

The author reports the peculiar history of his own case. In childhood he had an attack of acute appendicitis but as not operated upon. Recently

while in the East Indies on medical inspection he was obliged to go to the hospital owing to a painful swelling the size of a hen's egg in the anterosuperior iliac spine region. A diagnosis of possible acute appendicitis was made but as the symptoms were not clear operation was deferred.

Radiography showed the presence of two calculi. The position of the calculi caused a change to be made in the diagnosis: the case was now considered as one of ureteral calculi. However the absence of urinary symptoms and the history of the patient again caused a return to the former diagnosis of appendicitis and the patient was operated upon. Behind the cecum a large mass of adhesions was found. Two large calculi were extracted here from a large abscess. The appendix was completely gangrenous up to its cecal insertion.

Blanchod gives a short historical review of appendicular concretions. The question of the utility of the X rays in appendicitis was fully treated for the first time by Jacques Roux in 1913; he collected 9 cases. In 7 of these a calculus was revealed by the X rays prior to operation. In this thesis also Roux fully treats the differential diagnostic difficulties in interpretation of a radiograph showing a calculus in the vicinity of the appendix. W. A. BRENNAN.

Gaudier H. Severe Appendicitis in a Child. Ileosigmoidostomy and Gastro Enterostomy. (Histoire rare d'une appendicite grave chez un enfant et pour les suites de laquelle on fut amené à pratiquer une ileosigmoidostomie et une gastro enterostomie.) *Bull. et mem. Soc. de chir. de Paris* 1918, t. 11, 1449.

In a boy of twelve years on whom operation was done for symptoms of acute appendicitis a quantity of fetid pus escaped when the peritoneum was opened. The latter was limited by adhesions; the appendix was not found and the wound was drained. The child recovered.

Some months later the patient again came to the hospital with the same symptoms but recurrent and was again operated upon. The omentum and intestine were enclosed in a mass of adhesions; the loops of small intestine agglutinated the cecum; red and friable the appendix was not found. Further investigation revealed a left-sided subphrenic abscess.

The condition slowly improved with the exception of a persistent fecal fistula. This as well as the recurrence of digestive disturbances called for a new operation. An ileosigmoidostomy was done some months after the second operation. A month after recovery from this the child again entered the hospital in a state of extreme cachexia and with symptoms of intestinal obstruction. Radioscopic examination showed the stomach herniated into the thoracic cavity due to the subphrenic collection having perforated through the diaphragm and opened into the bronchi. A supra umbilical laparotomy was performed and the stomach reduced. A posterior gastro enterostomy was then done after clos-

ure of the diaphragm in order to fix the stomach and also to ensure a sufficient circulation.

The child made a normal recovery and remains in good condition. W. A. BRENNAN.

Urrutia L. Five Cases of Partial Colectomy (Sobre cinco casos de colectomia parcial). *Arch. d. enfer. d. apar. digest.* Madrid 1918, 1, 431.

The author did 5 partial colectomies for caecal tumors for cancer for tuberculosis and 1 for non tubercular typhilitis. Detailed clinical histories and illustrations are given. All these patients made good recoveries.

In the first three cases the anastomosis was end to end, end to side and lateral according to the Eiselberg Mayo and Moynihan techniques. In the last two cases the end to side anastomosis with the Murphy button as recommended by Charles Mayo was done. The author considers this technique much superior to the others owing to its greater rapidity and its very perfect asepsis. No change of gloves is necessary during the whole operation.

With regard to the fact that there was no mortality in these 5 cases the author points out that Brunner's statistics (1907) of 13 partial and total colectomies gave a 3.4% per cent mortality and the Mayo Clinic statistics for resection of the right half of the colon for tumors etc. in 235 cases give a 12.5 per cent mortality.

The author states that the radical operation gives excellent results in cancer of the cecum. The lymphatics of the colon are limited compared with those of the small intestine and malignant affections of the colon remain localized for long periods as compared with those of the small intestine.

The rational treatment of hypertrophying tuberculosis of the cecum is surgical. The radical operation is extirpation in this condition as well as in cancer. While in cancer exclusion is only palliative in the case of a tuberculous exclusion combined with heliotherapy may lead to a cure or to a condition in which the intestine may be resected.

Generally speaking owing to the difficulty in making a differential diagnosis between cancer and tuberculosis the author prefers to uniformly apply the radical operation to all caecal tumors. The operation to include extirpation of the blind below and above ligation of the ileocolic at its superior mesenteric origin resection of the last 10 or 15 cm. of the ileum cecum ascending colon and about one third of the transverse colon. W. A. BRENNAN.

Grasty T. S. D. Report of a Foreign Body in the Rectum Simulating Incomplete Abortion. *Am. J. Obst. & Gyn.* 1918, LXVIII, 737.

A primipara aged 35 had been under medical care for two weeks for a threatened abortion. She complained of severe cutting stabbing pains intermittent in character worse on movement and a slight bloody discharge. She was unable to assume any comfortable position or to walk without great

difficulty. The pains were excruciating and referred to the upper pelvis. She passed small bright red clots.

Upon examination the vulva and perineum were found blood stained and any manipulation elicited severe pain recurring at varied intervals. Abdominal examination showed the fundus of the uterus just above the brim of the pelvis. The vagina readily admitted two fingers, the cervix was soft and patulous and the uterus enlarged to about the size of a three months pregnancy.

On pressure over the posterior wall of the vagina much pain and spasm was produced and a peculiar rod shaped mass felt very tender to pressure. Introducing a gloved finger into the rectum a body measuring about one by one half an inch was discovered and with difficulty removed together with some pus, mucus and blood. This body was lying transversely in the rectum about two inches from the sphincter. It was found to be part of a peach pit.

No further treatment as instituted and the following day all pain disappeared. The patient was up and about able to walk and the discharge ceased. The pregnancy has gone on uninterrupted.

EDWARD L. CORNELL

LIVER PANCREAS AND SPLEEN

Harrigan A. H. Hypernephroma of the Falciform Ligament of the Liver. *A. S. G. Phila.* 98
L 395

Harrigan reports a case of hypernephroma of the falciform ligament of the liver. The patient was a married woman of thirty-five years. During the past two years she had suffered from severe abdominal pain in the right upper quadrant. Pain was intermittent in character and did not radiate. It was referred chiefly to the gall bladder region. There was no distinct biliary colic and no jaundice. The diagnosis was chronic appendicitis with possible cholecystitis.

Operation revealed the appendix long and thickened, the gall bladder and bile ducts negative for stone. A small mass about the size of a walnut, as felt in the falciform ligament and close to the free border of the liver. It was readily removed by enucleation. A rather active hemorrhage followed but was controlled by suturing the round ligament to the surface of the liver. The patient made an uneventful recovery. The pathologic diagnosis was hypernephroma.

Only one other case of this kind is reported in the literature. The author considered the case of interest from an autogenetic viewpoint but did not attempt to explain how adrenal rest reach during embryologic development the falciform ligament of the liver.

G. W. HOCHREIN

MacLeod N. Second Series of Notes on the Radiography of the Gall Bladder. *Arch. Rad. & Elect.*
Edinburgh 98 19

This article supplemental to a previous report on 32 cases published September 916. Forty-five

additional cases have been observed and as far as stone cases are concerned the author has found that where stones are present roentgenography should detect at least 50 per cent of them.

Of 5 cases showing stone shadows 4 were operated upon confirming the findings. Twelve showed gall bladder shadows which were considered pathologic 4 of these were operated upon and the findings confirmed in 3. None of the cases operated upon in the two series furnished stones which were not shown by the roentgenogram. Detailed histories of a number of cases are given and stress laid upon the value of stereoscopic exposures.

The author relates the findings of Case George and Leonard relative to gall stones and gall bladder disease as disclosed in their works on the alimentary tract.

ADOLPH HARTIG

Guerry Le G. Reconstruction of the Choledochus. *J. Am. Med. Ass.* 98 194

Guerry gives three reasons why it is necessary to reconstruct the common duct.

In case of permanent obstruction at the head of the pancreas if the gall bladder is intact the procedure is simple. Cholecystoduodenostomy is however a short circuiting operation rather than a reconstructing of the bile passages.

It may be necessary to restore the bile passages on account of inflammatory stricture of the common duct. If the stricture of the common duct extends above the junction of the cystic and hepatic ducts it may be necessary to excise the strictures and then if possible apply the author's method or the stricture may be divulsed.

The common duct may be divided in the operation of cholecystectomy. If the accident is discovered immediately repairs much easier than if a second operation is necessary to correct the injury. It is particularly necessary to remember here that the junction of the hepatic and cystic ducts which form the common duct is not always at a fixed point.

The author has reconstructed the bile passages in seven cases. While he does not outline his technique in detail he states that the three essential things to be accomplished by the operation are:

1. In certain of the cases in which the duodenum is closely bound down by adhesions its mobilization is most important as this is thereby enabled to effect the anastomosis with greater accuracy.

The essential thing is so to mobilize the mucosa of the duodenum that when the suture line is completed the mucosa and submucosa of the duodenum will be directly united to the light strictures of the hepatic duct. If this is done there will be a continuous epithelial lined passage and contraction in all probability will not occur. This point illustrates the inherent weakness in many of the so called autoplasmic reconstructions of the bile passages. Some of the methods break down just because in that they fail to provide a continuous mucous lined passage for the bile.

3 The third objective to be obtained is the one mentioned by Horsley namely the avoidance of contraction by not using sutures in the reconstruction which are foreign to this region

In his seven cases he had two deaths one in a woman of seventy due to surgical shock and the second to postoperative pneumonia. One patient was alive four years after operation with a small external biliary fistula that drained bile intermittently. Her health however was much improved. The other four cases have remained well since operation and may be regarded as complete symptomatic cures. G W HOCHREIN

MISCELLANEOUS

Durodié Laparotomy Throughout the Ages (*La laparotomie à travers les âges*) *J de méd Bor* deaux 1918 lxxix 233

The author states that laparotomy was a matter of daily practice on animals in ancient times. It was used in Galen's time in the most distant countries of Asia on camels, cows, etc. to make them sterile. In ancient Athens women were castrated by a laparotomy with the idea of preserving their youthful appearance.

In modern times Schlenker, Willius Payer and Taghioni are the first authors to take up the subject early in the eighteenth century. Their principal fears were the pain and hemorrhage and the precipitate introduction of air into the abdominal cavity which would expose the patient to an almost certain sudden death. In spite of these fears the French surgeon Ledran punctured ovarian cysts and tumors and in conjunction with Delaporte made the first complete incision of the linea alba from the umbilicus to the pubes for cysts. This patient died thirteen days after operation but in 1746 Ledran was more fortunate; his patient recovering after two years of suppuration.

The first satisfactory result was that of Laumonier of Rouen in 1776 and Laugier some years later operated upon the Duchess of Choiseul but the utility of the method was not fully established in France till Lejars demonstrated it in 1825. In England it had received earlier recognition.

Since ancient times also laparotomy was equally in use for the cesarean operation. Pliny mentions it in the ninth chapter of his seventh book. Some erroneously think that the cesarean operation is so named after Cæsar who was born that way. As a matter of fact according to Pliny Cæsar took his name on account of the operation as those who were delivered by this method were called *cæsares* or *cæsones* a *cæso matris utero* cut from his mother's womb.

There is no mention of the operation until the year 1500 when Jacques Nutter, an animal cruetor of Liegershausen, performed the cesarean operation on his own wife who could not be delivered in the natural way. She recovered and had two subsequent natural labors. W A BRENNAN

Tanton J. Derache P. and Wallace C. Symposium on Pelvic Wounds. More Especially Those of the Bladder and Rectum. *Arch de méd et plâ m mil Par* 1918 lxx 291 313 30

Reports by these authors were submitted to the Fourth Interallied Surgical Conference at Val de Grâce March 1918.

Tanton's report covers the subject very fully. He treats of isolated pelvic wounds of isolated bladder wounds with or without concomitant lesion of the bony pelvis of isolated rectal wounds with or without lesion of the bony pelvis and of associated bladder and rectal wounds with or without concomitant lesion of the bony pelvis.

Reports of 3,719 recent pelvic wounds have been collected. These include 1,659 injuries involving the ileum, 659 sacral, 20 pubic and 241 ischial injuries. The total mortality was 10.37 per cent, the majority being immediate deaths. Besides these 414 old injuries of the pelvis have been reviewed.

The complications which may occur in this class of injuries are suppurative proctitis, phlegmon of the iliac fossa, pelvic cellulitis, thigh abscess, necrosis of pelvic cellular tissue and coxofemoral suppurative arthritis.

In the 3,719 recent cases there were 87 cases of osteomyelitis and 770 of fistulous osteitis. Ankylosis or stiffness of the hip was noted 76 times.

There were 367 cases of isolated bladder injury with or without lesions of the bony pelvis, 334 being recent, 55 involved the bladder alone and 312 were accompanied by a pelvic fracture.

Of the 334 recent bladder injuries, 68 were in the peritoneal portion and 66 in the extraperitoneal. The intraperitoneal injuries are due to projectiles entering in the lumbar region or in that neighborhood and may be accompanied by intestinal injuries. Extraperitoneal lesions are due to the projectile penetrating the perineum or the vicinity of the thigh.

When an intraperitoneal injury is diagnosed the procedure is laparotomy, suture of the bladder, suture of intestinal injuries if any extraction of the projectile and closure leaving a drain in Douglas' pouch. It is quite possible to dispense with an indwelling catheter, catheterizing the bladder every three hours for four or five days. The mortality is considerable. In 20 laparotomies 8 of them with intestinal lesions, there were 11 immediate and 5 secondary deaths.

The ideal treatment in the case of an extraperitoneal wound would be stripping up the projectile, trajectory clearance and disinfection of the fracture area if a fracture exists, removal of the projectile, reconstitution of the bladder wall and drainage. But this is hardly applicable except to lesions of the anterior bladder wall; the lateral and fundal parts of the bladder are not easily reached by operation. The intervention in such cases should be and usually is confined to disinfection, primary supra-pubic cystostomy and drawing off the urine.

As many of these wounds cure spontaneously the

indication for operation should be precise. The aetiological classes (1) when there is a regional wound through which clear but bloody fluid issues (2) when there is complete retention with nothing escaping by the wound but a considerable urinary effusion infiltrating the pre- and perivesical tissue.

In the first case operation should be limited to surgical clearance and drainage of the abscess. Hematoma is abundant and continuous, and the foreign body is demonstrated by the internal examination.

In the second case the operative indications are more compelling. It is necessary (1) to evacuate the subperitoneal effusion (2) to drain the bladder and (3) to check urinary infiltration.

Infection is the complication most frequently attending infection, unfortunately frequent and in 37 cases of bladder wound there are 10 cases of pyelonephritis. Fistulae are the most frequent complication in cases of urinary fistulae. Obsolete purulent fistulae are also frequently seen. The latter have a variety of causes.

The wounds were collected 517 in total, of which the rectum with or without pelvic abscesses accounted for 44, involved the rectum alone and 23 were associated with injuries of the bony pelvis. In the latter the sacrum and sacroiliac region are most frequently involved. As in the preceding class, the lesion of the intestinal tube may be intra-peritoneal. Of the 464 enteric wounds 6 were intra-abdominal and 83 extraperitoneal.

Of the 6 enteric wounds 13 were accompanied by bone lesions. The prognosis of such wounds is very grave, there being 3 immediate and 6 subsequent deaths. Such a wound is almost always fatal. Laparotomy with suturing of the rectal breach beside the attempt of any accompanying fracture.

Of the 38 extraperitoneal wounds in the lumbar region 39 were accompanied by injury to the bony pelvis. In an antenatal wound the injury is extremely rapid and all neighboring tissues and ganglia become involved. The victim of the fatal patient died within forty-eight hours from shock, haemorrhage, and enteric fistulae. The fracture of the femur infected.

The treatment includes (1) primary drainage of the fistula (2) primary physiotherapy of the secondary infection complications.

The retention of the best method of physiotherapy would be deviation of the faeces by an artificial anus, but the author thinks that practice is premature. The present shows that many cases and the patient is satisfactorily followed up by rigid cleansing of the tract by rectal irrigation of the rectal wound. The latter treatment is progressively and ureters spontaneously and the faeces assume their normal course.

Postoperatively faecal fistulae are numerous (92 cases) sphincter troubles especially incontinence are also frequent.

Of associated rectal and bladder wounds 4 cases were collected, 214 of them recent. These may

be intra- or extraperitoneal of the caecum, extraperitoneal and died early after operation, either from shock or haemorrhage.

The extraperitoneal class may be divided into two groups, vesicorectal and no ureteral. Of the latter 76 wounds were seen, many accompanied by pelvic fracture. There were 6 deaths.

The indication for operation in the caecum is to suppress the issue of faeces by the rectal wound as well as to prevent passage into the bladder and to prevent rectal and perivesical infection. The treatment of choice is therefore suture of the rectal perforation and plugging of the anterior rectal wall so as to shut off the bladder. This is combined with continued catheterization of the bladder. The procedure is not always possible and then conducted then to be followed consists of (1) a suprapubic cystostomy to draw off the urine (2) drawing off the faeces by colostomy (3) stitching and cleansing the trajectory of the projectile. All three procedures may not be necessary, or possible at the same time. Drawn off the faeces by colostomy has few parts and appears only in the statistics 2 cases. Suprapubic cystostomy was done in 5 cases.

Tanton is personally rather inclined to favor deviation of the faeces, but not the urine. A vesicorectal fistula generally closes spontaneously.

According to Tanton the treatment of enteric wounds associated with rectal and bladder wounds consists of stitching up the entry and outlet trajectories, large drainage of the rectum and defunctioning of the bladder by permanent sound, reserving colostomy for extensive wounds with important osseous lesions in cases where severe infection is feared.

Twenty-five secondary deaths due to various complications were noted in the class of cases. Persistent vesicorectal fistulae are the most frequent complication.

Of the treatment of fatal abdominal wounds of all types, the prognosis is found in the pelvic region as follows: pelvic fracture with extraperitoneal wound and 5 cases wound of the perineum with 4 cases of isorectal wounds, 1 a bladder wound, 4 cases of pelvic fracture with rectal wound, 4 cases of pelvic fracture with urethral wound, 2 cases of pelvic fracture with isorectal wound. Case 1 seen in the proportion of bladder and rectal wounds reviewed in war is very small.

The general views of Dechastrot treatment agree in the main with those of Tanton, but he is not so optimistic concerning vesicorectal wounds.

Willis in 965 operations treated cases found the rectum wounded in 2 and the bladder in 45. In 25 cases the bladder alone was injured and in only 2 cases were the simultaneous wounds of the bladder and rectum. Fourteen of the rectal cases died and 3 of the vesical.

He thinks that colostomy must be considered when the entire lower segment of the intestine is to be exposed in the pelvis. Transverse colostomy

the operation of choice. The determination for colostomy ought to depend on the probability of the union of the sutured intestine. Wounds involving the rectum in the neighborhood of Douglas sac are the most difficult because often here a solid suture is impossible.

Intraperitoneal bladder wounds after suture do not require suprapubic drainage. Catheterization for some days is called for. Extravesical bladder wounds should have a drain in the operative wound as well as an intravesical drain. When the bladder is injured on its rectal face it seems rational to open it and suture the wound on the interior as Drummond has done.

Non-complicated bladder wounds have given a mortality of 36 per cent. shock and hemorrhage are the usual causes of death. Pelvic fractures and injuries of the pelvic veins are contributory factors. When there is a concomitant small intestine wound the prognosis is darker and in 15 such cases there was but 1 recovery.

In discussing the papers Tuffier insisted that the majority of vesicorectal wounds recover spontaneously and that all primary operations or suturing the bladder and rectum are often useless as with patience and cystostomy such lesions heal. When there is a very extensive loss of substance certain fistulae must be operated upon. W. A. BRENNAN.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES TENDONS CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Bunting, T. L. *Sequestra in War Injuries* Arch Radiol & Electrolitrap 1918 xxiii 103.

Sequestra from disease have usually a distinctive appearance. An isolated piece of bone surrounded by other bone obviously living is easily classified. But in comminuted fractures the decision as to which fragments are living and which are dead is next to the localization of foreign bodies the most important work of the roentgenologist in a war hospital and also the most difficult. Reviewing 139 cases Bunting does not feel that experience has added to certitude in this class. Long standing fragments with definite margins offer little or no difficulty. The problem is to recognize the sequestra before they come to this stage and thus promote recovery.

Three points to be considered in the recognition of sequestra are situation, density, and the nature of the margins.

Wherever there is close relation between obviously living bone and a doubtful fragment without any sign of union between them there is a strong presumption that the fragment is a sequestrum. The stereoscopic method is of the greatest importance in this study for in no other way can exact relations be determined.

Some sequestra are seen as of greater density than the surrounding bone because the dead bone has not been involved or involved to a less extent in the rarefying process that takes place in living bone near an inflamed area or because the dead bone is surrounded by new callus of less density. Bunting is not convinced that sequestra ever acquire an increase in density. This relative density gives a characteristic appearance but only some sequestra show it and these only until the main bone returns to normal. Later the same fragment may become less dense than the near living bone by rarefaction. Absence of distinctive density gives no presumption of absence of sequestra.

A few sequestra may be known at once by the clean cut margins but with the majority the margins are soft apparently a result of chronic inflammation. No sequestra have margins showing any outgrowth of callus. Again stereoscopic study is often necessary. If at any time most of the fragments show callus outgrowth while one or more do not these latter are presumably sequestra.

No one sign is conclusive but the combination of two or all of them is good ground for a positive diagnosis while even one if typical is strong presumptive evidence. But in this as in so many other problems a final decision can be given only when radiographs and clinical evidence are considered together. There is therefore one more reason for closer co-operation than is usual between radiologist and surgeon. D. R. BOWEN.

Charbonnel. *The Biological Aspects of Freely Transplanted Total Bone Grafts* (Du rôle et de la valeur biologique des greffes osseuses totales par transplantation libre) J de med Bo deaux 1918 lxxi 79.

Charbonnel's study of bone grafts by free transplantation based on his personal experience and study of the literature leads him to believe that there is no need for concern as regards the taking of the graft if there is a slight degree of infection. Absolute asepsis is not necessary. Also if necessary a graft totally deprived of periosteum may be inserted with a result no worse than with periosteum.

The author believes that if as Imbert teaches the graft alone directs the formation and the direction of callus and induces an osteogenetic condition in the bone end then this function will be better effected when the graft is inserted as a mortise than when it is applied on the lateral face of the bone. Central medullary mortising in of the graft is much more valuable according to the author than the Albee lateral bone graft. The graft can be fixed to the bone ends by small Lane or Lambotte plates and screws.

In pseudarthrosis resection of the bone-end should be as economical as possible because those cases in

ing was present below the lateral malleolus not connective with the main tumor. The veins were dilated over the swelling. X ray showed a marked enlargement of the bone with a thinning of the cortex.

At operation the fibula was opened and a portion of the contents removed. They corresponded to the description ordinarily given of giant cell tumors except that they were more reddish brown. The fibula was then completely scooped out. Two more large masses were discovered and were dissected from the peroneal muscle and tendon sheath immediately behind the bone tumor but apparently not connected with it or with the growth dissected from the tendon sheath.

Pathologic report on all three masses was giant cell growths. Twenty nine months after operation there was no evidence of a return of the growths.

In the author's survey of the literature he found that a history of trauma was often obtainable in connection with these growths but the relation of trauma to the disease was apparently unknown. The contents of these tumors are usually friable yet with more or less cohesiveness, current jelly in color and often with mottled areas of fibrous tissue. No tendency to spontaneous cure was found. Histologically the tumor consists of a delicate stroma of connective tissue with spindle cell and giant cell. The appearance of the tumor in the author's case was distinctly that of a granuloma.

G W HOCHREIN

Gasne E. Treatment of Little's Disease (Le traitement de la maladie de Little). *Rev d'orthop* Par 1918 11 219

Gasne compares the results of the treatment of Little's disease by Foerster's method of section of the spinal nerve roots with the orthopedic treatment.

The orthopedic method gives good results and even if it necessitates prolonged and patient treatment it has the advantage that the patient runs no risks. Root section also gives good results but only at the cost of orthopedic treatment almost as prolonged as if there were no operation. There is also the operative risk to the patient. Even if reserved for patients showing a purely spinal paralysis there appears to be no special indication for it since such patients are cured with less trouble and danger by orthopedic methods.

The author agrees with those who think that radicotomy should be employed only as a last resort when contracture persists in spite of prolonged orthopedic treatment and that it should be reserved for patients who are extremely contracted for those in whom immobilization in a good attitude is impossible or for those with total contracture of the lower limbs in whom after tenotomy there is the risk of an inverse position by the action of antagonistic muscles.

These conclusions seem to conform to actual present day tendencies. Kirmson, Biesalski, Klapp, Froelich and other have within recent years expressed similar opinions. The value of the

method has been exaggerated and its permanent results are doubtful but it may be tried in very grave cases when all other methods fail.

W A BRENNAN

Mayer L. Recent Studies in the Anatomy and Physiology of Tendons. Their Application to the Technique of Tendon Operations. *J Am Med Ass* 1918 121 1198

The author gives a brief summary of the anatomic and physiologic principles underlying tendon transplantation.

In some experimental work in 1912 he tried to solve the problem of preventing postoperative adhesions. Thin tubes of rolled silver petrolatum bismuth paste fascia peritoneum and vein sections were used for ensheathing the tendon. None of these substances prevented the formation of adhesions. In fact all materials used except caryle membrane caused the formation of more adhesions than in the control animal where nothing was used.

Following the suggestion of Biesalski the substituting tendon was placed in the sheath of the paralyzed tendon in exactly the same position. There was complete absence of adhesions when the limb was immobilized for thirty days subsequent to operation.

In addition the author emphasizes the importance of maintaining the normal relationship of fascia to sheath of maintaining the normal tension and in establishing a physiologic fixation. To determine these facts experimental work upon the cadaver upon animals and upon the human was conducted.

The importance of a very elastic tissue lying between the tendon and the fascia is emphasized. This he calls the paratenon. The paratenon is prolonged downward into the sheaths as a tongue like structure. This is the important tissue in the gliding mechanism of the tendon.

The normal tension of tendons was determined on dogs. The tendon was severed and the proximal end pulled into apposition with the distal by means of a recording instrument and the tension thereby measured. The degree of force necessary to approximate the end represented the normal tension.

When under anesthesia the origin and insertion of the muscle were brought as close together as possible the tension was always zero regardless of the size or strength of the animal.

The physiologic method of anchoring the tendons consists in traumatizing the subjacent bone. The resulting osteogenic activity fixes the transplanted tendon.

J P BLUMHARDT

Porter J L. Rheumatoid Arthritis. *Minnesota Med* 1918 1 417

It is the author's belief that there is no such pathological entity as rheumatoid arthritis or arthritis deformans. While the profession at large looks upon these cases of chronic rheumatism as hopeless the author feels that they furnish some of the most satisfactory results of any of the chro-

in joint ailments that naturally fall to the orthopedic surgeon for treatment

The dictum of Thomas that a sensitive joint must be given rest is just as true today as forty-five years ago and applies to all kinds of painful joints in order to secure absolute rest the patient must be put to bed. If the joints are painful in addition to rest in bed they are treated with local applications of heat. If traction is used to overcome contractions it must be constant and painless.

As a very large percentage of these cases have an excess of indican in the urine the patient is put on strictly meat free diet and tea and coffee are interdicted. Large quantities of other fluid and especially fruit juices are prescribed and the diet is limited strictly to fruits, vegetables and cereals. The only animal protein that is allowed for the first two weeks is buttermilk and cottage cheese.

When the pain and sensitivity have disappeared and the deformity overcome the joint is immobilized preferably in a plaster of Paris cast. After this the patient is encouraged to be up and out of bed as much as possible without putting weight upon the affected limb. R. B. COFIELD

Poussin M. C. of Incipient Colic Without Ankylosis (L. I. d but p t g n kyl mm t) R g e d d t d h p P 98 58

The author thinks that not only there the possibility of a long delay in the development of an acetabular but also in the recovery without ankylosis and without the necessity of wearing an apparatus. The effect of (1) by long immobilization of the hip in a large plaster cast (2) by continuous extension applied to the plaster apparatus (3) by the injection of modified fluid into the acetabular joint.

Immobilization of the hip is continued during the first six months; the plaster cast is then removed in the course of the third month. Continuous extension is made on the plaster and counter extension in the thigh. The patient is then allowed to see the physician. The extension draws the femur down.

The intra-articular injections are made in the Scarpa triangle in the anterior face of the femoral neck. A needle is inserted in the cast in this location. The injecting fluids used are Celsus iodiform creosote oil, pre-amplified apthol, glycerine. About 5 to 10 cc of fluid is injected every third day for about ten injections are made. The inter-injection is carefully sterilized. After the tenth injection the series of injections is continued about three months. If at the end of this time the femoral head still is painful a new series of injections should be started.

By the seventh month spontaneous or provoked pain generally disappears and the thick plaster cast is replaced by a smaller and lighter one. Absolute rest is required. If any pain persists extension is continued on the lighter cast. At the end of the twelfth month a small plaster cast is placed

or better a celluloid apparatus. This is constructed after careful modeling and holds the pelvis, thigh, leg and foot. The hip is still immobilized but the knee and ankle joints are free.

Six to eight months after cessation of all pain the hip will be freed at night, the celluloid being worn during the day. Exercises are begun with care and proper help and support and are carried out with patience until the patient is able to get about with a cane. The time and number of exercises are carefully graded. Massage and electricity should also be used in this period.

The author's application of this method in his surgical tuberculosis service has given the best results. W. A. BRENN

FRACTURES AND DISLOCATIONS

Daw S. W. Affections of the Ligaments Due to Gunshot Wound. Their Results and Treatment. B. J. S. G. 98. 9.

Gunshot wound may affect the functions of joints either by (1) laceration or absence of range of movement (2) undue mobility or (3) alteration of the sense of movement. The author discusses the specific diagnosis and treatment of these three conditions.

Manipulation of the joint by moving it through its part or all of its movements under general anesthesia is chiefly useful in the correction of dislocations and in changing the position of a joint from one which functions badly to one which functions well. It is better if permanent tissue is to be finally restored.

In improvement of mobility, more likely to be gained by light movement followed by periods of rest or by loosening of contracted parts in other words by gradual change of position rather than by forcible movements through a large range.

Operative measures to obtain mobility are rarely of advantage except in the case of the elbow joint where they are usually satisfactory. Massage and bath are useful adjuncts to improve circulation and add the deep peral fasciitis. Passive movements are every limited unless the patient is harmful. Active movements are especially those of normal use of the joint. A most valuable and will often do more to increase mobility than any surgical measure. T. D. P. A. W. A. B. V.

G. S. et al. Treatment of the Pseudarthrosis of the Tibia (T. M. T. D. S. P. D. Th. D. G.) A. H. D. M. D. I. P. H. M. M. I. Pa. 98. 1. 36.

Goetz presented to the Fourth International Surgical Conference a paper based on the study of 1765 cases of men who were either not operated upon or unsuccessfully operated upon and presented accounts of the results. The government records show that out of 523 deaths resulting from the management of temporary unions, 658 were on account of pseudarthrosis of the upper limb and pseudarthrosis of the lower limb. The upper extremity of the

humerus is the most frequent site. In the lower limb the muscle masses assist in approximating the bone fragments even when they are in bad position.

In addition to the governmental data, Gosset has collected the various statistics published during the war by French authors and has sent out a questionnaire. The various tabular statements sent in reply are published. These tables show the frequency of pseudarthrosis according to the segments of the limb and confirm the results obtained from the government report.

These tables show that in 633 collected cases the order of frequency was forearm 231 cases, humerus 223 cases, leg 111 cases, femur 68 cases.

The diaphyses are attacked more frequently than the epiphyses in the humerus only 40 per cent of the pseudarthroses are situated in the juxta-epiphyseal regions in the femur only 3 per cent.

The casual factors of the pseudarthroses are given as follows: loss of substance 48.9 per cent, muscular or fibrous interposition 20.5 per cent, faulty coaptation or prolonged suppuration 12 per cent, loss of substance, faulty coaptation and suppuration 10 per cent, vasculotropic disturbances 3.1 per cent, suppuration and vasculotropic disturbances 2.9 per cent. It is evident that loss of substance is by far the most frequent cause.

The techniques followed in the course of 55 operations were as follows: freshening the bone ends and metallic suture in 171 cases, prostheses with screwed plates in 141 cases, grafts osteoperiostic (Delageniere) single osteoplastic and homo-grafts in 146 cases, freshening and immobilization without suture in 48 cases, implantation of a neighboring bone in 15 cases, freshening and catgut suture in 11 cases, epiphyseal resection in juxta-epiphyseal cases 9, metal clips in 4 cases.

Eighty per cent of the cases resulted successfully and 20 per cent failed.

Many cases of pseudarthrosis could have been avoided by a better and more complete treatment of the fractured bones. Modern methods of wound sterilization permit disinfection of the fracture area and where radiography reveals a faulty reduction, an immediate osteosynthesis can be done. Such practice would enormously decrease the cases of pseudarthrosis. Judicious selection and daily supervision of apparatus tends to the same end. Frequently extension apparatus keeps the bone ends too far apart.

When a pseudarthrosis is evident, two types must be kept in view — pseudarthrosis with and without loss of substance. Pseudarthrosis with loss of bone substance necessitates the application either of a bone graft or of an osteoperiostic graft. The grafting must be deferred until the cutaneous wound is cicatrized and all signs of inflammation have disappeared.

In simple pseudarthroses and in pseudarthroses with loss of substance in the segments of a single bone it is only necessary after cleaning and freshening the bone to make an osteosynthesis. The best

method is fixation by metallic plates and screws and in certain places with metallic wire screw or wire being placed as far as possible from the site of the pseudarthrosis.

In the case of pseudarthrosis without loss of substance the best time to operate would seem to be at the end of the inflammatory period when the tissues are cicatrized. If the cicatrization is too slow, operation can be carried out in non aseptic areas with good results. Where a graft is indicated the areas must be aseptic.

As a general rule consolidation may be expected to begin after the fifth week. This is especially true for the humerus. In other bones the time varies as follows according to Dujarier: (a) after metallic prosthesis, femur 3 to 8 months, tibia 2 to 3 months, forearm 2 to 8 months; (b) after bone graft, forearm 2 to 5 months, tibia 1½ to 6 months.

The author favors the thin short (Delageniere) grafts to the large and long Albee grafts. He thinks that the latter are doomed to resorption and often to fracture.

Failures in the reparative operations for pseudarthrosis are usually due to postoperative suppuration or to osteoporosis of the fragments.

W. A. BRUNNAN

Hey Groves E. W. Ununited Fractures with Special Reference to Gunshot Injuries and the Use of Bone Grafting. *Brit J Surg* 1918 vi 203

The experience of the author is based upon 60 cases of non united gunshot war fractures observed during the past two years. The obvious cause of the non union was primary loss of substance in 34, necrosis or secondary loss of substance in 3, displacement of the fragments with intervention of soft parts in 21 and eburnation or sclerosis in 2. The femur, humerus and radius were the bones most usually involved. The cases now treated do not include any which have recovered apart from definite reconstructive operations.

The author's opinion with regard to the removal of so called bone sequestra in a comminuted fracture is very clear and definite. He states that if free drainage has been secured with a removal of gross dirt and septic foreign bodies, then the leaving of bone fragments in a comminuted fracture, the surest way of securing natural and rapid repair while removal of these fragments is the surest way of producing an ununited fracture.

Necrosis may be regarded as a common cause of delayed union but very rarely as a cause of non union. Necrosis very seldom affects the ends of the main fragments of a fracture and it is a mistake to saw off these ends with the idea of removing infected tissue.

In 35 per cent of the author's cases non union was due to displacement of the main fragments. The great majority were in the femur and due to the limb having been incorrectly immobilized in the first instance. The limb should be placed in the natural position of muscular relaxation with the hip and

knee emiflexed and the thigh abducted. In the
 may the main fragment be brought into
 position by the upper femoral. If this position is not
 possible then the author recommends the use of
 a nail union or screw. Putting the limb in the straight
 position merely tied to a plaster splint is of little
 uncorrected displacement.

The author does not think that there is any
 mobility of the essential surfaces of the union but only
 of the distal union.

When the union is due to the bone being
 separated by a deep scar, the use of the
 author does not believe that any of the non opera-
 tive methods are of much avail to bring about union.
 Neither does he rely on operative measures
 which aim at callus production without suturing of the
 bone. Experience tells that this may be successful but
 the clinical condition are difficult to follow. The method
 is liable to fail. *Scelus of the bone and soft parts*
 make all the difference.

In all operative procedure the isolation of the bone
 end to throw off callus and the necessity of
 such a healthy tissue must be kept in view.
 Other points to be considered in performing the opera-
 tion are: the selection of the soft tissue, the avail-
 ability of functional conditions of muscles, nerves, etc. as
 epitechnique and immobilization. At least
 months should be betwixt the healing of the epitechnique
 wound and any reoperation. The patient must be
 during the time of rest and passive movement of the
 encouraged by massage and the function of
 the muscles and nerves stimulated electrically. All
 scar tissue should be removed. This may be partially
 effected in preliminary operation. During the long
 waiting period muscular atrophy must be prevented
 and the general nutrition of the limb maintained and
 its appearance must be normal before the reparative
 operation attempt is made.

The author details the operative
 technique that may be employed in the plating
 step cut procedure in the amputation pegging plate
 methods of bone grafting.

When the leg is to be placed in the main char-
 acter of an unhealthy bone to be placed in the cre-
 nate union. It is very important to see to it that
 the distal end of the bone is at least at the level of the
 bone. It is necessary to have a good blood supply to
 the bone. The bone must be cut with two or
 three centimeters of the bone shaft in the distal end.
 The step cut procedure in the case of the humerus
 or both forearm bones, the best to be used is the
 step cut procedure that the author has found to be
 the best for the distal end.

Thus, the distal end of the bone has a narrow
 indications in the treatment of ununited fractures.
 It is only of use in the healthy bone. The fracture
 must be without any comminution of the bone. The
 distal end must be in the position of the parts.

With regard to bone grafting the cases vary and
 essential conditions in the removal of the bone fall
 into two classes: the cutaneous fibrous tissue and
 the periosteum is not an essential element in the graft
 since the naked graft will take and become un-

ited but the preservation of the periosteum is desirable
 except when a graft is entirely intramedullary. The
 most important reason for this is that the periosteum
 is the natural vascular envelope of the bone.
 The author discusses the role of the periosteum and
 illustrates it from a number of his bone graft cases. He
 finds that in the grafts from the bone very slowly
 and finally the periosteal flap in adults forms no
 bone at all, that the grafts covered by the periosteum
 are capable of depositing the new bone in the
 form of an inlay. It may hence be inferred
 that the osteoblasts necessary for the bone forma-
 tion are contained in the dense bone but that the
 proteoglycan and cellular material of the periosteum
 is necessary for their activity.

The author's series of cases include 34 of a
 enormous bone grafts, 9 were complete successes, 5
 were essential successes and 10 were failures. The
 study of the failures and the cases in which suc-
 cess was not complete has shown that

1. In the case of the operation was performed much
 too early in the periods of a few days up to three
 weeks after the injury.

2. In the case of there was only scanty contact be-
 tween the graft and the bed.

3. In the case of the graft as done, sequestered
 avascular bone was taken from the fragment and
 made to be the gap.

4. In the case of the patient fell and broke the graft.

5. In the case of the procedure was too complicated
 and the patient died from shock.

6. In the case of mobilization was inadequate.

In the case of shock had not been sufficiently re-
 placed by the lithiasis.

8. In the case of the patient with the bone was
 adherent to the bone, the bone was turned down over the gap
 and produced only a shoddy bone.

W. A. B. E. VAN

Lehe R. and Policard A. The Stage Treatment
 of Large Comminuted Fractures of the Femur
 by the Use of the Traction Apparatus and the
 Physiological Fracture (Traction and the Physiological
 Fracture) *Pr. Méd. P.* 98 533

In the treatment of gunshot and aphyseal fractures
 here the use of a tremendously comminuted and com-
 minuted union of the bone in one spot, it is gen-
 erally recommended to move all the bone frag-
 ments in the undisturbed position to preserve the soft
 muscular and ligamentous attachments of the bone
 and to use the traction apparatus for the reduction
 of the fracture.

It seems to the author preferable to move the
 bone fragments completely out of the wound and to
 place them in the position of the bone fragments in the
 wound or to delay the suturing of the soft parts as well as
 the removal of the bone fragments. Such complete
 removal of the area of the comminuted fracture is
 not likely to be of benefit on but in the case of the
 fracture may not be possible in the neighborhood
 of the muscle and the bone. Thus, the use of the
 traction apparatus with the bone fragments in the wound
 is the best method.

also two other reasons (1) because the preserved bone fragments do not remain attached to the diaphyseal column but become detached by muscular contractions and tend to produce a pseudarthrosis (2) in the special conditions of the altered tissue such fragments do not preserve their vitality or they may become so rarefied that they do not constitute healthy bone.

The authors have divided their treatment of such wounds into three parts. The first is an immediate surgical clearance with such excisions as assure complete asepsis; this is followed after three days by repair of the soft parts viz. delayed primary suture repair of the bone lesion by osteosynthesis or bone graft is done within from fifteen to twenty days after the suturing of the soft parts.

Osteosynthesis appears to be indicated in cases of limb segments with a single bone but bone grafts where the segment contains two bones viz. in the forearm or in the lower leg. Apart from cases with considerable loss of substance bone grafts do not appear to be indicated for the humerus or femur.

The authors have made four osteoperiosteic grafts and five osteosyntheses. All of these have been quite successful. The study of these cases lead them to recommend the procedure which they have followed.

W. A. BRENNAN

Moore A. E. The Results of Primary Excision for Wounds of the Elbow Joint. *Brit J Surg* 1918 vi 265

The author reports on 11 cases treated in an orthopedic hospital in which a primary excision of the elbow joint had been made at the front on account of gunshot fracture wounds. In 10 of these cases a flail elbow to a greater or less degree resulted. The uselessness of the limb is in almost direct proportion to the amount of bone removed. The greatest extent of bone missing between the cut ends of the humerus and radius and ulna was four and one half inches resulting in a quite useless joint but as the amount of loss diminishes the functional results improve. A limited excision is satisfactory. The author thinks that if the bone is comminuted muscle fascial flaps should be carried in to cover comminuted bone as in arthroplasty. Postoperative support of the forearm is essential. Rest is more important than early mobilization.

As a corrective measure capulothoraphy in certain selected cases of flail elbow is attended by some success.

W. A. BRENNAN

Negri L. Fractures and Articular War Injuries of the Lower Limbs (Fratture e lesioni articolari degli arti inferiori in chirurgia di guerra). *Osp* 11 maggio e Milano 1918 vi 51

The author observed 32 bone and joint gunshot wounds. In 13 cases a thigh and in 1 case a leg amputation had to be done altogether about 6 per cent of amputations. Two of these were for gangrene one because of the primary condition of the limb the other 3 were due to aggravation of the

septic conditions. Ten of these amputation cases recovered and 4 died. The percentage of death in the amputated (8.57) compares very favorably with the statistics of French surgeons their percentage being much higher. Generally a circular amputation in healthy tissue was made. In two cases with high lesions the amputation was made in the midst of infected tissue. One of these cases recovered.

The percentage of amputation in complicated thigh fractures was 55 per cent and the total mortality in this class of fractures was 11.11 per cent.

There were 50 cases of knee joint injuries of which 36 per cent were infected. There were 5 deaths and 4 amputations.

The total mortality for the 32 fracture and joint injuries was 6.46 per cent. W. A. BRENNAN

SURGERY OF THE BONES JOINTS ETC

Coffield R. B. Disinfection of the Knee Joint. *J Am Med Ass* 1918 lxxi 186

The results achieved in the present war in treating infected wounds of the knee by disinfection and immediate closure have been the source of much surprise and satisfaction. The following conditions however are necessary to obtain favorable results.

1. The operation must be done early before the spread of infection and disorganization of joint structures have occurred.

2. Thorough lavage of the infected and contaminated areas followed by primary closure of the joint capsule is essential.

3. Foreign bodies must not be allowed to remain within the joint cavity.

4. When drainage is used at all it should be carried down to the capsule but not into the joint cavity.

5. Immobilization of the joint must be secured by adequate mechanical fixation.

In order to carry out these principles it is of the utmost importance that a diagnosis of suppurative arthritis be made early in the course of infection. Every joint that shows evidence of inflammation and effusion should be aspirated for diagnostic purposes and the aspirated fluid examined cytologically as well as bacteriologically. The author lays emphasis on the fact that the bacteriologic examination often fails to reveal the presence of microorganisms either in smears or cultures while in septic joint conditions on cytologic investigations a high percentage of polymorphonuclear leucocytes is found in the sample of aspirated fluid.

The author makes an incision 1½ or 2 inches long parallel to the inner or outer border of the patella extending into the joint cavity. The joint cavity is then thoroughly flushed out for fifteen or twenty minutes with a 1:2,000 mercuric chloride solution by means of a gravity syringe fitted with a rubber instead of a glass tip.

Nisbet A T II The Conditions Found in Amputation Stumps and Some Notes Thereon
Med J Australia 1918 II 173

The author gives the result of his X ray experience in an orthopedic hospital where patients had been sent for the fitting of artificial limbs. These examinations made some months after the wounds were received have shown that practically all amputation stumps were in a septic condition varying from a small sinus in an otherwise perfectly healed stump to large open postoperative wounds exuding quantities of pus as the result of reamputating a septic stump.

In 11 amputation stumps of the thigh which were examined radiographically to determine the cause of their septic condition he found that all had a pathological condition of the bony stump 49 had some form of sequestra present and 22 had exostosis alone in which no sequestrum could be detected. Of the 49 which contained necrosed bone 43 also had exostosis present. This leaves out of 1 cases only 6 which had sequestra without any con current bony new growth.

For comparison healed stumps of 16 patients who had been fitted with artificial limbs were examined. Of these 12 had some form of exostosis and 4 showed a clean healthy bone with no irregularity whatever or 25 per cent against 10 per cent of septic stumps.

The author does not believe that foreign bodies imbedded in the flesh cause any great amount of sepsis on their own account but if the area around them becomes septic they act in the same manner as necrosed bone. He has found as many as 5 fragments of bone imbedded in the soft and bony tissues without apparent discomfort.

Since many of these patients are sent to the X ray room without any further history beyond that they complain of recent acute pain in the stump the author regards it as important to remember that this painful sensation may be caused by any of the following conditions: abscess, sequestrum, foreign body, inflamed and probably bulbous nerve, exostosis causing secondary inflammation, adherent scar, peritonitis with a fall and neurasthenia.

The author advocates the use of a moderately soft X ray tube in these cases for these reasons:

1 It shows the difference in density between normal and diseased bone.

2 It brings out more prominently the soft, only partly calcified exostoses which otherwise may be completely missed.

3 The depth of the bone beneath the skin is clearly shown which is occasionally a guide to the surgeon in making his flaps.

4 A sinus in its full length may show quite distinctly on the plate. H J VAN DEN BERG

SURGERY OF THE SPINAL COLUMN AND CORD

Villandre C Treatment of Spinal War Injuries
(Traitement des traumatismes rachidiens de guerre)
Presse méd Par 1918 xxv 561

Although the prognosis of war injuries involving the contents of the spinal dural sac is perhaps the most somber of all war injuries yet one must guard against the fatalism which considers such patients doomed. Very notable improvement is possible if complications can be avoided. The treatment includes medications to combat bed sores, urinary infection and pulmonary complications. Urinary infection can be obviated by the indwelling sound and frequent bladder irrigations. Pulmonary development should be watched by auscultations and treated.

The surgery of spinal lesions should in general be the same as that applied to other wound from the viewpoint of disinfection and the removal of foreign bodies. Such treatment must be early. A medullary suture should not usually be made even when there is a section of the cord visible by the opening of the meninges because such does not as a rule give physiological results.

Regional anesthesia should be preferred in all operations on the spine produce shock. All medical and surgical treatment should be given in a special neurologic center, a surgeon and radiologist strictly collaborating in the examination. The author outlines the personnel and equipment of such a center.

While the opinions of surgeons still differ with regard to early or deferred surgical operation in spinal cases the author believes that the indications must be sought rather by the aid of pathological anatomy than by the clinical findings and he thinks that the teachings of the former clearly suggest early intervention. Operation should if possible be done in the very early hours following injury.

W A BRENNAN

Sharpe N Fracture of the Spinal Column with and Without Cord Injury *J Am M Ass* 1918 lxxi 136

In by far the greater number of fractures of the spine the cord or its roots are involved but there are however a large number of spinal fractures in which the cord and its roots escape damage. These cases are often diagnosed as sprains or contusions. The author reports five cases of fracture of the spine without damage to the cord in some of which the bone injuries were such that it was difficult to understand how the cord escaped involvement.

The main support or strength of the spinal column lies in the articulations of the transverse processes and it is rare in fracture by indirect force to have the cord injured except by hemorrhage unless there is rupture of these articulations. The most severe injuries of the cord are seen when these articulations are ruptured.

In fracture dislocation the displaced vertebra may remain displaced or spring back partially or completely into its normal position leaving as the only signs of dislocation the signs of cord injury which may vary from partial paralysis to complete abolition of all function below the lesion giving rise to the suspicion that the cord has been completely crushed at the point of injury. But complete abolition of function below the lesion in a spinal fracture does not prove that the cord is completely crushed or severed or even that it is damaged beyond repair. This has been shown time and again at operation and also in the after results in unoperated cases. The only reliable sign that proves a complete crushing of the cord and the only contraindication to early operation is a bony deformity so great as to show complete obliteration of the spinal canal. Operation should not be performed until after the patient has rallied from the initial shock of the injury. A safe general rule to follow is not to operate while the pulse is above 100.

The frequency with which fractures of the spinal column without cord signs are entirely overlooked indicates the necessity of careful clinical and roentgen ray examination of all cases of suspected injury to the spine. In a patient able to move about in bed with the fracture not immobilized suddenly twisting or turning movements might easily convert a fracture without cord signs into a fracture with marked and serious cord involvement. Also failure to recognize a fracture with no attempt made to restore the normal spinal curve may result in weakening of the spinal column and more or less permanent disability with persistent paraparesis later of cord symptoms due to new bone formation. This is especially true when the fracture occurs in the vertebral body.

The treatment of fractures of the spinal column without cord symptoms is immobilization either with a plaster collar with extension or by molded plaster splints depending on the location of the fracture. Fracture of the vertebral body is best treated by overextension on a Bradford frame which is much more comfortable and efficacious than a plaster cast. E. C. ROOS

Le Fur R. Resection of the Sacrum for Chronic Osteitis Following a Wound of the Sacral Region (Résumé du cas pour ostéite chronique consécutive à une lésion de la région sacrée) *Pres. Ch. G. 98 74*

A soldier showed a large transverse bullet wound of both gluteal regions involving sacrum and coccyg both bones being fractured. There was gangrene of the soft parts.

About three months after injury it was found necessary to resect all the posterior wall of the sacrum as far as the third sacral vertebra for sacral osteitis following the lodging of the bullet within the sacral canal at the level of the third vertebra. The projectile was extracted. The gravity of these wounds is well known. They usually result in a chronic meningeal infection which term alone is death. Operations in this region must be done with great prudence: the nerves of the cauda equina and the meninges usually descending as far as the third sacral vertebra and the vesical, anal and genital nerves originating from the third and fourth sacral plexuses. The great sacral sympathetic the hypogastric plexus.

The patient showed no sphincter troubles either during his wound or after operation. The only postoperative trouble was a fistula which persisted some months. W. A. BRENNAN

SURGERY OF THE NERVOUS SYSTEM

Williamson R. T. The Differential Diagnosis Between Functional and Organic Paraplegia *Br. M. J. 98 275*

Many well known differential points are enumerated in this article but the valuable feature is especially brought out in the differential diagnosis between functional and organic paraplegia. Loss of the tendo achillis reflex and isolated loss of the vibrating sensation.

In many cases of functional paraplegia the plantar reflex is not obtained and although there is no many organic diseases yet in such other reflexes are often affected and if the other anatomical functional diseases must be carefully considered. If the plantar reflex is lost and knee jerks obtained the organic method of functional paraplegia can be determined by testing the tendo achillis reflex which reflex is always present if the disease is functional. When the achillis reflex is lost the disease is always organic. The converse is not true as in some rare

cases of organic disease the plantar reflex is lost and the achillis obtained.

The spin reflex which must be intact if the plantar reflex is obtained is situated in the first and second sacral segments of the spinal cord. Just above this is the fourth and fifth lumbar region where the tendo achillis depends. If the plantar reflexes are lost in organic disease usually by extension of the lesion the tendo achillis reflexes are isolated but in functional disease the tendo achillis reflexes are always obtained. Hence the value of always testing the achillis reflex where the plantar reflex is lost.

The achillis reflex is of special value also because it is very often lost in many cases of organic disease before the knee jerk reflex is lost in a peripheral nerve (diabetic leucoplegia etc.) and therefore is a false test. In testing this reflex if the patient is paralyzed in bed he should be turned on his side if possible he should kneel on a chair with the feet hanging down over the edge and the calf muscle relaxed.

The other sign especially mentioned is the vibrating sensation which may be tested by a large vibrating tuning fork. The foot of which is placed on a subcutaneous bony prominence such as the malleoli, the inner surface of the tibia, the styloid process of the ulna, etc. A few control observations are desirable to see if the patient clearly recognizes the nature of the sensation. In testing the sensations it is well to test the touch sense first and the vibrating sense last.

In the first few days of any form of sensory disturbance the vibrating sensation may be the only objective sign of sensory affection. In certain cases of paralysis of the legs touch pain and temperature sense are felt but repeated examinations of the vibrating sensation reveals this sense lost. In such cases functional affections like hysteria and malinger may be excluded.

In the author's experience when the diagnosis has been especially difficult or the symptoms slight and indefinite the three indications of organic disease which he has found of the greatest service have been the Babinski or Oppenheim reflex and the loss of the vibrating sensation while other forms of sensation are unaffected. P W SWEET

Kennedy R. Some Notes on Operative Procedure in Nerve Injuries. *Brit J Surg* 1918 vi 317

Kennedy thinks that nerve regeneration whatever its nature finds without doubt the greatest bar to its successful accomplishment in the development of the fibroblasts into fibrous tissue. This not only has an antagonistic effect on the process of regeneration but a destroying effect after that process is accomplished. In operative work therefore everything which tends to produce scar formation militates against success.

A septic technique of a high standard is essential if good results are to be expected. The amount of sterilization to be done should be as little as possible so as to reduce the amount of reaction to a minimum. All manipulation of the nerve throughout the operation should be the gentlest. Knives should be as sharp as possible and all nerve slicing should be done with a fresh knife the slicing being performed with a gentle sawing movement so that the fibers sustain as little damage as possible.

It is desirable to use a tourniquet so that the procedure shall be bloodless. The application of forceps and ligatures considerably irritates the parts in which the newly sutured nerve is to lie. Before the suture is completed if there is any chance of damage having been done to a vessel of any size the tourniquet may be removed, the vessel ligated if necessary, and then the nerve operation completed and the wound closed but in the absence of such an exceptional circumstance it is better to close the wound, apply the dressing firmly and then remove the tourniquet. Any blood that comes from the capillaries escapes into the dressings and does no harm and it is rare that enough appears to more than stain the innermost dressings.

W A BRENNAN

Langworthy M. General Principles of Splinting for Paralysis from Nerve Injuries. Special Application of These Principles in Median and Ulnar Nerve Paralysis. *Am J Orthop Surg* 1918 xvi 445

This paper deals with the general principles involved in splinting cases of paralysis resulting from nerve injuries and also the special application of these principles in median and ulnar nerve paralysis.

The general principles are outlined as follows:

1. Every case of paralysis from nerve injury should have an appropriate splint applied.

2. The splint should be applied continuously from the time of the reception of the nerve injury causing the paralysis to the time of the disappearance of the paralysis and should fulfill the following principles: (a) prevent overstretching of the paralyzed muscles which may be caused by gravity or contraction of the opposing muscles; (b) prevent deformity which may be the result of contractures of the opposing muscles or other soft tissues; (c) allow harmless movement of the part and allow for treatment without removal of the splint; (d) it should not interfere with the circulation.

The author prefers metal splints for cases with wounds needing dressings; in most other cases splints made from plaster of Paris bandages which are moulded on the part and therefore fit perfectly and at the same time are light and durable and very efficient.

R B COFIELD

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABSCESSSES, ETC.

Rohdenburg G L. Fluctuations in the Growth Energy of Malignant Tumors in Man with Especial Reference to Spontaneous Regression. *J Cancer Research* 1918 iii 193

A study was made of the statistics of this subject as presented in the literature and the results are presented in the form of a table which is very interesting to the student of this question.

If all the cases are considered collectively without regard to the probable accuracy of the various reports it will be noted that malignant epithelial tumors are present in the largest number with malignant connective tissue tumors second in the order of frequency. The causes of regression as given by the various authors or as determined by the history of the case show an almost equal number following incomplete operation and heat. Whether this heat be the result of some general acute infection

INTERNATIONAL ABSTRACT OF SURGERY

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Sutton G F Pulm nary Fat Embol m and Its R lat on to Traumat c Sho k B i W J 9 8 i 368

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W e k r n

Hunt V C Reaction Following Blood Transfusion by the Sodium Citrate Method *Texas St J Med* 1918 xiv 192

This article is a resume of the technique and reactions following the use of blood transfusion by the citrate method as used at the Mayo Clinic. In a series of 26 transfusions performed on a total number of 301 patients the indications for blood transfusion were as follows: (1) to replace blood lost; (2) to stimulate the hematopoietic organs; (3) to add a thromboplastic substance in those cases with prolonged coagulation.

Frank post transfusion reaction characterized by chill and fever, nausea and vomiting, urticaria and severe headache occurred in 18.7 per cent. The percentage of reaction in the pernicious anemia cases was 3.3 per cent as compared with 14.8 per cent in conditions other than pernicious anemia. In no case was there any evidence of hemolysis.

There were seven instances in which through some error in grouping a wrong donor was used. Severe reaction occurred on the table in each of these when less than 150 ccm had been transfused. The symptoms of pain in the chest, marked dyspnea, pain in the back, cyanosis, edema of the face and eyelids, flushing of the skin and often urticarial spots appeared very suddenly. In two of these cases the symptoms were not properly interpreted as danger signals and 500 ccm were transfused; one of these patients became comatose and died thirty hours later and the other died within two hours. The remaining cases in whom less than 150 ccm of blood were transfused all recovered.

The author discusses the various theories as to the cause of post transfusion reaction with the conclusion that present knowledge does not permit one to assign a definite reason for such reaction. The cases with pernicious anemia were as a group in a poorer general condition than the other group and showed an 8.5 per cent higher incidence of reaction. These patients in subsequent transfusions showed a steadily decreasing incidence of reaction until only 7.5 per cent of those who showed reaction to the first transfusion showed any reaction with the fifth.

In respect to donors it does not appear that some are more capable than others of producing reaction. The author does not believe that the citrate method is attended by a higher percentage of reaction than the old blood method. In 60 per cent of the transfusions for pernicious anemia in which reaction occurred there was marked improvement in the blood picture in spite of the reaction. The remaining 40 per cent showed poor response which is also seen at times in the absence of any reaction.

ELLIS FISCHER

POISONS

Martin W The Physical Factors Influencing Infection *Ann Surg Phila* 1918 lxxviii 436

During the war the whole subject of infection has been studied under special conditions. All injuries

by artillery projectiles, rifle and machine gun bullets at close range are heavily infected. If left to themselves they regularly develop infection of a type and severity rarely met with in civil practice.

The gravity of infection is regulated by a number of mechanical conditions which are realized anatomically in certain wounds and not in others: (1) pressure at the focus of infection or point of initial lodgment; (2) foreign bodies; (3) devitalized and necrotic tissues; (4) dead spaces.

Open wounds are difficult to infect whereas irregular wounds, punctures or lacerations are prone to infection.

Foreign bodies act unfavorably on the vitality of surrounding cells, acting both as mechanical and chemical irritants. If infection is established about a foreign body it has an extraordinary tendency to persist until the foreign body is removed. Therefore foreign bodies are most important factors in implanting infection and in causing it to persist.

After every injury there is a phase of cellular shock which bears a direct relation to the degree of the initial violence. In every injury there is also cellular death and the amount of necrosis is proportionate to the degree of violence. Certain organisms like the tetanus bacillus and the group of anaerobic bacilli which produce gas gangrene are in a measure saprophytic, meaning that they do not gain foothold in the tissue and multiply unless there is a certain amount of necrotic tissue. Moreover, certain forms like the bacillus aerogenes capsulatus need a special type of necrotic tissue; this bacillus flourishes only in dead muscle.

The mechanical removal of all necrotic tissue from a contaminated wound prevents gas gangrene and this has been practiced with considerable success in the war. In every wound necrotic tissue must be disintegrated and eliminated before healing can occur.

The essential factors both in the prevention of the initial lodgment of bacteria and their persistence in the tissue are relief of tissue tension and pressure from without, mechanical elimination of necrotic and devitalized tissue, removal of foreign bodies, avoidance of stagnant fluids in dead spaces and the obliteration of uncollapsible cavities. The experience of the present war has added much to the knowledge of dealing with infections. G W HOCHREIN.

HOSPITAL MEDICOLEGAL AND MEDICAL EDUCATION

Alhbin C M An English Orthopedic Hospital *Brit Surgeon* 1918 xliii 200

The Pilkington special hospital is probably the most fully equipped and up to date hospital in England. By a carefully arranged timetable nearly 1,000 patients can be treated daily, no more patients being admitted than can be treated.

On admission patients are thoroughly examined for sensations, electrical reactions, a careful history recorded and measurements taken of deformities.

Most patients are subjected to physiotherapy the following day.

The surgical department contains an operating room equipped with special orthopedic fixtures and instruments. The most common operations are neurolysis, nerve suture and transplantation, removal of equestrian bone transplantation and fixation and removal of foreign bodies. All except bed cases are dressed in a modern surgical ward which also contains an operating room for the treatment of septic wounds. The X-ray department has the very best apparatus obtainable and is used mainly for diagnosis, radiographic and fluoroscopic. One large room divided into four compartments containing beds is devoted to electrotherapy and massage. The bath bed assigned a graduate masseuse and a complete electrical equipment. The electrical treatment consists of galvanism, faradism and induction. Forty-eight patients are treated every half hour.

The entire ground floor of the addition is devoted to hydrotherapy and the mother bath. There are two large pools for general hot and cold at bath and in addition six large special designed arm baths, two smaller ones on hip, limb bath and twelve hip collar bath. It supplied the compress, darts, tubbings, the light treatment, gently stimulate the known induce hypæmia. Tench feet are treated with hot and cold bath, one hot and one cold, by direct and indirect methods from one to the other every fifteen minutes.

The mechanotherapy department is a large room and contains twenty pieces of apparatus. Twenty of the exercises are multiple, the last is mostly for fingers, wrists and ankles. The movements are taught into play are extensive, the exercises are individual. The remaining fifty machines are to elicit physiological movements of certain joints.

Physical training based on local remedial training together with special general exercises used to build up the patients' general physique. Physical treatment is directed by medical exercise. Plate

of Paris splints and casts are used extensively in treatment and also for educational purposes.

The carpenter's workshop is divided into several departments, the chief being elementary carpentry and wood turning, special tools being constructed to treat deformed hands. Fretwork, drawing, painting and clay throwing are also taught, causing coordination of injured hands and feet and favoring the usefulness of those disabled members.

During the season a considerable amount of garden truck is produced. In cases of right handed injury, the patients are taught left handed or mirror writing. For recreation there is a large room containing a piano with playing attachments, game of different kinds and billiard table. Football and hockey have been organized. A small nearby lake provides rowing and fishing facilities. Good library facilities are present.

Treatment in the hospital has been of a steady and gradual improvement. Cases treated were largely with having already received the maximum treatment of the ordinary hospital. Many of the discharged patients returned to service and others have recovered sufficiently to take up employment in many instances better positions than those held before the war.

The type of cases treated here as follows based upon one year's report taken from the record of the patients' conditions of the actual period: 9 per cent median nerve, 3 per cent ulnar nerve, 12 per cent musculospiral nerve, 10 per cent sciatic nerve, 9 per cent external peroneal nerve, 4 per cent posterior tibial nerve, 4 per cent compound fracture, 13 per cent compound fracture with malunion, 7 per cent compound fracture with nerve injury, 14 per cent peripheral adhesion, 1 per cent etc., 3 per cent internal derangement of knee, 3 per cent trench and flat feet, etc., 4 per cent amputation, 1 per cent cerebral, 1 per cent paralysis, 2 per cent.

H. H. FRANK

GYNECOLOGY

UTERUS

Inbarne J Corrective Treatment of Congenital Cervical Stenosis and Uterine Antelexion with the Inbarne Apparatus (Tratamiento corrector de la estenosis de cuello y antelexion de útero congénitas con el tallo Inbarne) *Rev argent de obst y ginec* Buenos Aires 1918 II 293

The author's method of treating congenital stenosis of the cervix uteri with uterine antelexion was first described two years ago but he was not then in a position to give any clinical results. He now reports the findings in 16 cases in which he has applied his method.

Inbarne makes a prior bilateral incision of the cervix under local novocaine anaesthesia. The section is made deep toward the cervico uterine canal in order to give a good internal orifice. A special apparatus consisting of a stem and two wing made of silver is then introduced without trouble the wings maintain the cervical wall in the corrected position during cicatrization. The degree of separation of the wings can be altered as desired. The apparatus or dilator is fixed in position by means of special sutures which the author describes and illustrates. They pass through the wings and the cervical wall. After fixation the vagina is packed with iodoform gauze.

The apparatus is left in position for a time varying with the case. Vaginal lavage is carried out daily and the patient is usually up by the fifth or sixth day. As a rule about eight days of treatment with the apparatus is required.

The author's method of previous incision of the cervix was originally done from the point of view of treatment of stenosis alone. He found however that in cases where there was a congenital antelexion associated with the stenosis it was corrected and maintained after the fixation of the apparatus. But in such cases the author thinks it necessary to prolong the duration of the apparatus in the cervical canal to about three or four weeks.

Of the 16 cases treated 14 showed stenosis and antelexion with more or less inflammation. 2 showed stenosis and retroflexion. There were 13 clinical cures including 1 or 2 with some dysmenorrhea persisting the treatment was discontinued in 1 case 1 case was improved and in 1 there was no result. The anatomical results were satisfactory in all cases. W A BRENNAN

Schiller H Red Degeneration of Fibroids During and Following Pregnancy *Am J Obst N Y* 1918 LXXVIII 519

The author reports the following case:

A young woman twenty five years old pregnant five months and up to this time in perfect health

suddenly experienced severe abdominal pain. She took the customary cathartic and hot applications and spent a rather poor night. In the morning her temperature was 101 F pulse 120 the abdomen was distended and the uterus as far as could be outlined in spite of the meteorism nearly up to the umbilicus. Above the left Poupert's ligament could be seen and felt an oblong tumor the size of a lemon extremely tender the long axis about in the direction of the inguinal canal but probably somewhat more proximal to it. The tenderness was so intense that the consistency of the swelling could not be determined with any exactness nor could percussion be used.

The patient had not passed gas nor had a stool since the onset of her illness sixteen hours before. The nearest pathologic process to consider was an incarcerated hernia. The white blood count was 11,000.

After cutting through the muscles and peritoneum the tumor revealed itself as an intramuscular fibroid and protruded readily into the incision. The peritoneum and this muscular layer of the uterus which seemed under some tension were cut the tumor easily enucleated and its bed sewed with catgut.

There was an uneventful recovery. The pain and fever disappeared the first day and at term the woman was delivered of a seven pound baby. The specimen was 9 cm long 6 cm wide. It was thick, dark bluish red and on its cut surface showed a deep mahogany color like a rare steak. The capsule was normal also a small layer of muscle bordering on the capsule.

EDWARD I CORNELL

Costobadie H P The Surgical Cure of Uterine Prolapse *Brit M J* 1918 II 30

Costobadie has nothing new to offer concerning the surgical cure of uterine prolapse but discusses according to his opinion the best procedures for the cure of prolapse that are in use today.

In his opinion uterine prolapse is on the increase and he gives the following reasons: (1) the great increase in women workers (2) heavier kinds of employment for women (3) less food especially fats (4) increase in wage which keeps the woman at work longer than she is actually able and brings her back after illness and confinement sooner than heretofore.

In the treatment of prolapse the pessary is not to be considered particularly is this true in the working classes.

In the operative treatment hysterectomy is not to be considered and ventral fixation with colporrhaphy is a procedure to be employed only with the utmost discretion. The American transposition

operation is recommended by highly but the
author believes that the F. Th. R. G. L. op. ti. n. f. r.
pr. l. a. s. e. a better procedure.

The Fathergill operation mutually described and there are several drawings which serve to illustrate the test. The author has done the operation many times and with excellent results. It follows as a matter of course that the input of the cervix precedes and perineorrhaphy follows this operation.

Regarding perineo haphy the author call attention to the very efficient plastic operation that is commended by Donald of Manchester although he states that any firm put upon the pelvic floor that really correct the deformity answer the purpose fully.

Carried out according to the steps in detail by the author, the results are almost invariably excellent in every situation and the operation can be carried out with far fewer pregnant cyrtifid gerbils.

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EXTERNAL GENITALIA

S I M dé Th Radical T eatment of Genit I
P lap in Wom n by Sutur e of the Levat
and U ogenital Supports Abo e the V gln
(P l p g t d l f mm d) p
l t d el t d pl h g t l
t d) B l l d d t d P o 8
l 60

Salva Mercad's method of treating genital prolapse in men by an antirclotophy includes the classical engorgement or clorophaphy with dissection and excision of the vaginal strip and separation of the bladder from the uterus and vagina. This latter constitutes exposure of the posterior face of the bladder, a careful dissection of each side of the vagina along the whole anterior-posterior extent and exposure of the lateral face of the bladder until the lateral bladder is perceived. This gives access to the internal edge of the urogenital floor and internal edge of the levator. Four horizontal catgut sutures are passed through the tomaculae on the median line and thus form a continence floor for the bladder which is held up and

The method of Salva Merced applied to a common notion of the Academy for examination and

report. The commission found that when prolapse due to a very relaxed condition of the principal difficulty especially after operation and that the effect of colporrhaphy upon the cystocele is indefinite. The incurability of severe cystocele in total prolapse gives particular interest to Merz's method of suturing the levators and urethral floor above the vagina.

His opinion has given encouraging results and the commission considers it good in cases of total prolapse it appears to be the best and most effective of the operations aimed against either benign or severe internal cystocele. W. A. BRENNAN

MISCELLANEOUS

| Hinchey F | Vaginal Drainage in P1ic Cases |
|-----------|--------------------------------|
| J M | St M 15 0 8 356 |

Hi chey poi t out the advantage of vaginal
d ainage the treatment of certain bdominal
nditis ns While condemning the suprapub
d ain o a count of the ea ly adhe ns form g
r nd th i be making it not only o thless but
lange u to the p toneal c vity he cla ms that
th vaginal route has the advantage of follo ng
tur l gr ty and the cti e outpou g of se
r ti n p e adhesions

The technique is simple but care must be exercised by the assistant in passing the long instrument back, if the cervix not to injure adjacent structures. The bearing of drainage is a split rubber tube of at least one half inch in diameter the tube being enclosed in a rolled piece of gauze. This tube is usually placed about one inch above the base of the cul de sac and its side is sewed to the edge of the cut or to the stump of the cervix. It extends to the uterus. The vagina is not packed. The tubal drainage is passed from the abdomen and grasped by the forceps passed by an assistant from the vagina. The uterus is covered with a moist aseptic pad which is kept moist with rubber tissue. No douches are given at any time. By the time the catgut suture is absorbed the tube is usually expelled. The wound is not bed.

In conclusion the author states that vaginal douchage is the safest procedure in the presence of infection. Postoperative infection should be treated by retroperitoneal drainage over Poupert ligament.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

McPherson R Two and One Half Years Experience with the Conservative Treatment of Eclampsia *A J St J Med* 1918 xviii 395

The author reports 67 cases of eclampsia occurring at the Lying In Hospital in New York City treated medically in convulsive toxemias. Briefly the treatment is as follows:

The patient is placed in a quiet darkened isolation room, blood pressure taken and catheterized specimen of urine examined. She is given hypodermically $\frac{1}{2}$ grain of morphine sulphate and then 4 grain every hour until the respirations drop to 8 per minute. The stomach is washed out two ounces of castor oil being left in the stomach after the lavage and a colonic irrigation of five gallons of 5 per cent glucose is given. Phlebotomy is done if the blood pressure is over 175 s. stolic.

Practically all of the cases have delivered themselves normally or have been delivered by easy low forceps. The gross maternal mortality was 10.4 per cent but one case died before treatment could be instituted and one died of cerebral embolus. Excluding these two cases the mortality was 4 per cent. The number of stillbirths was 28.5 per cent practically all of these being premature or macerated foeti. Morphine did not seem to make any difference in regard to viability in the cases at term when the foetal heart had been heard on entrance.

L K P FARRAR

Brodhead G L Is Caesarean Section Justifiable in Eclampsia and Placenta Praevia? *A J St J Med* 1918 xviii 389

In beginning this paper the author states his belief that probably in a large percentage of cases of eclampsia and placenta praevia abdominal section is unwarranted and unjustifiable. When the child is dead or not viable when the patient is in active labor with the cervix partially dilated or easily dilatable and when the patient cannot have the advantages of a well equipped hospital and the services of a competent surgeon other methods of procedure may be not only more advisable but absolutely indicated.

He agrees with Petersen that the operation has never been given a fair trial and believes that if caesarean section were performed soon after the first eclamptic convulsion had occurred in a primipara at or near term with undilated cervix both the maternal and foetal mortality would be lowered. To further statistics upon this operative procedure 39 reports are given of previously unpublished cases with a maternal mortality of 15.4 per cent and a foetal mortality of 5.8 per cent.

A recent questionnaire to obstetricians elicited 48 hitherto unpublished records of caesarean section for placenta praevia with a maternal mortality of 10.8 per cent for all classes of cases operated upon but excluding a case operated upon in extremis and an eclamptic patient it was 8.3 per cent. The foetal mortality was 10.8 per cent but excluding babies under seven months it was only 3.2 per cent.

The author emphasizes the importance of performing the operation early before much blood has been lost and before numerous vaginal examinations have been made.

L K P FARRAR

Moenckeberg C Angular Pregnancy (Embarazo angular). *Rev 150c méd argent* Buenos Aires 1918 xxix 69

The term angular is applied to that type of pregnancy in which the ovum develops in the uterine portion of the tube.

Some authors have denied the existence of this variety of ovular insertion but the author who is professor of obstetric at Santiago de Chile considers that it does exist as a perfectly definite entity and distinct from extra uterine pregnancy. It is therefore a uterine not an ectopic pregnancy. The variety of extra uterine pregnancy termed interstitial approaches that of the angular and may be considered as a transition form.

Interstitial pregnancy usually ends by rupture of the tube or where the ovum is expelled into the uterus abortion follows. Angular pregnancy on the other hand gives symptoms only during the first three or four months its further development and termination is very similar to normal pregnancy.

There are certain anatomical modifications peculiar to angular pregnancy. The ovum is arrested in its journey to its usual situation by folds or tumefactions in the uterine wall due to some previous inflammatory condition. The ovum being detained in the cornua trophoblasts perforate the mucosa and nidation commences. The first anatomic modification resulting is the abnormal development of the cornua according as the ovum develops. This persists during three and one half to four months until the volume of the developing ovum is able to entirely fill the uterine cavity and then the organ recovers its ovoid form by degrees.

The sign of Hegar which in a normal pregnancy is observed in the isthmus region and is transversal is in the angular pregnancy higher up and its direction is oblique. By palpation the corpus uteri will be relatively hard and separated from the lateral tumefaction which logically suggests an adnexal lesion or an extra uterine pregnancy. A third anatomic peculiarity of angular pregnancy is in the position of the placenta. In this type of pregnancy

that variety of placenta is seen which Koerber has termed marginal or circumvallate in which there is seen a whitish thickened band or fold of membrane around the organ which is at times covered by a fibrous lining (the annulus fibrosus of Busch).

The clinical consequence observed in a girl in pregnancy are more or less acute pains in the lower abdomen and to one side similar to those of extrauterine pregnancy sometimes menstrual losses of blood. The author inclines to the theory that the latter are true metrorrhagias by partial evacuation of an ovum and similar in connection to the hemorrhage resulting from a low situation of the placenta. Finally after birth there may be incarceration of the placenta by contraction of the cervix in which it is situated with hemorrhage.

The author concludes that genital pregnancy is frequently wrongly diagnosed as extrauterine pregnancy and hence the following scheme is a differentiating guide.

1. In angular pregnancy (a) the tumor is hard and careful palpation will show it united with the uterus (b) the tumor is lateral and anterior and high in position (see cases of retroflexion) (c) the round ligament is outside the tumor (examined under anesthesia) (d) the tumor hardens during uterine contraction.

2. In extrauterine pregnancy (a) the tumor is hard, resistant, fluctuant, never bland and is separated from the uterus (except in cases of peritoneal reaction) (b) the tumor projects inferiorly and is situated in the Douglas region (c) the round ligament inside the tumor (d) the tumor does not alter its consistency when the uterus contracts.

Points to be remembered are the most important for diagnosis but a diagnosis should not be made until repeated examinations have been made and all other possibilities excluded. W. A. B. & A.

Cameron G. S. Acute Endocarditis in Pregnancy

Cad. M. J. 1918, 1: 89

The patient, a 26-year-old woman, gave a negative past history. She showed symptoms of mild influenza. The next day she had a violent chill with temperature of 103 and pulse 100. Examination showed a normal condition of the lungs, marked pyrexia, present. On repeated examination as noted. The blood had been persistently constipated. The patient was pregnant sixteen weeks.

From this time on the patient had repeated chills, elevation of temperature, returning to normal. Blood examination showed a white count of 15,000 to 20,000. On the fourth day in the hospital the patient developed a murmur at the apex and the next day murmurs were heard at the aortic and pulmonary orifices. She aborted and died three days later.

This case of primary acute endocarditis may have been due to one of these sources as a result of the influenza from the intestinal tract or from pyorrhea.

I. E. B. SHAW

LABOR AND ITS COMPLICATIONS

Stephenson H. A. Pubiotomy. C. J. S. J. M. 1918, 1: 457

In this article the author suggests that cesarean section because of its simplicity has won favor among surgeons generally. Pubiotomy while not a substitute for cesarean section but a rational but trivial operation is often disregarded. It has much to recommend it in a small field. The author points out three groups of cases where pubiotomy is preferable to cesarean section. He describes the technique of the operation and gives the prognosis to both the mother and child. As the operation is always done in the interest of the child it should never be done if the child is dead or if it is imminent danger. If the conjugata vera is 7 cm or less or in cases where infection is manifestly present it is not wise to do the operation.

Group 1. These are certain cases of slight disproportion between the head and pelvis in 75 percent of which spontaneous labor occurs. In the remaining 5 percent of cases after the failure of several hours of second stage pains to bring about the descent of the head into the pelvis one is confronted with the choice of pubiotomy, high forceps or craniotomy. Cesarean section is not indicated on account of the danger of infection. If pubiotomy is chosen it is inserted in place then apply the forceps or do a cesarean. If gentle traction is not successful the bone should be sawed through when action will be relatively easy.

Group 2. Those cases of funnel pelvis in which the diameter of 8 cm or less. Pubiotomy is usually the best possible procedure. In these cases normal delivery may occur with the bischall diameter of 5.5 cm but accompanied by a relatively long period of gestation (the distance from the midpoint of the bischall line to the top of the sacrum). In this type of pelvis the largeness of the iliopectineal pubiotomy releases its maximum and often a normal pelvis results.

Group 3. These cases of breech presentation where the head is a slight disproportion between the pelvis and head. In a head presentation one can usually determine fairly accurately whether or not spontaneous labor will occur. In a breech presentation it is often impossible to detect before it is too late a disproportion between the head and the pelvic straits. This may result in a futile attempt to deliver a living child or in a craniotomy on the aftercoming head. In such a case one should wait for complete dilatation of the cervix then prepare the patient for breech extraction and pass the saw blade and the pubic bone before attempting to extract. If the extraction offers no difficulty the saw can be removed and the wound closed. If difficulty arises the bone can be quickly sawed and the child delivered safely. The saw should always be passed first as there is not sufficient time to do so after the child has already been extracted as far as the head.

The technique of the operation is that described

by Doederlein in 1904. Cleanse the patient for operation, catheterize and make a small incision parallel to and slightly above the pubic spine. If the incision is made too far laterally there is danger of damaging the obturator or femoral vessels or the attachment of Poupert's ligament and if too far medially a symphyseotomy will result. A small bony segment should be left between the incision and the symphysis pubis. A curved needle resembling an aneurism needle is passed behind the opening and the needle pushed through the labium majus. The saw is attached and the needle withdrawn leaving the saw in position behind the bone.

After the bone is opened it is wise to have an assistant stand on each side and make pressure from the hips so that the gaping does not exceed 6 cm. After the delivery catheterize the bladder to determine the presence of injury. The upper incision is closed by a suture and a small drain is inserted in the labium. The bone is immobilized now by a heavy four inch band of adhesive encircling the pelvis. A Bradford frame facilitates handling the patient for a few days but she is usually up and walking by the end of the third week.

In the hands of experienced operators the mortality rate is not higher than 3 per cent. A series of cases in 1907 showed a maternal mortality of 1.88 per cent and a fetal mortality of 4.8 per cent. No serious or lasting complications were encountered.

It seems justifiable to conclude that

1. Pubiotomy competes with cesarean section only in a limited class of cases.

Pubiotomy is often indicated in (a) moderately contracted pelvis where the test of labor fails to bring about spontaneous birth and when both mother and child are in good condition; (b) funnel pelvis of pronounced degree especially in young women; the effect on the pelvis here is often such as to leave the outlet normal; (c) breech presentation with large babies or with borderline pelvis.

3. The prognosis is good for both mother and child when done by experienced operators in well equipped hospitals and in cases where both mother and child are in good condition. C. D. HOLMES

MISCELLANEOUS

Meyer A. W. Hydatiform Degeneration with Deductions from over 150 New Cases. *Am. J. Obst. N. Y.* 1918 LXXVIII 641.

That hydatiform degeneration is incomparably more common in the earlier than in the later months of pregnancy is substantiated by the statistics covering the material examined in the Mall collection. From these it is seen that, excepting cases of large hydatiform masses originally classed as hydatiform degeneration from inspection of the gross specimens alone, practically all the rest of the specimens are relatively small and young. This is true especially of those from tubal pregnancies and hence it may be regarded as established that hydatiform degeneration is a change which is exceedingly common in the earlier months of pregnancy and that it becomes progressively less common as the end of pregnancy is approached.

The obstetrician does not see most of the cases of hydatiform degeneration for they merely are reported as miscarriages and the specimens often are destroyed or retained unrecognized by the general practitioner or the midwife. They often are aborted spontaneously and completely with the decidua and rarely are contained in a closed decidual case when they reach the laboratory.

The conclusion regarding the greater incidence of hydatiform degeneration in the early months of pregnancy is conclusively confirmed by the occurrence of 3 of the 48 tubal specimens within the first two classes of the pathologic division of Mall and 104 of the 144 uterine specimens in the first six classes of this division. Most of the specimens in these classes are composed of villi, empty chorionic vesicles and embryos with a length of less than 20 to 30 mm.

The average period since the last menstruation in 51 of the 113 uterine specimens of this series of hydatiform degenerations was 66.6 days or two and one fourth months. The average age of 36 women aborting hydatiform moles was thirty-one years.

EDWARD L. CORNELL

that variety of placenta seen which Koelliker has termed marginated circumvallate in which there is seen a whitish thickened band or fold of membrane around the organ which at times fixed by a fibrous lamina (the annulus fibrosus of Busch)

The clinical consequences observed in angular pregnancy are more or less cutaneous in the lower abdomen and to some degree similar to those of traumatic pregnancy sometimes menstrual losses of blood. The author inclines to the theory that the latter are true metrorrhage by partial separation of an ovum and similar in causation to the hemorrhage resulting from a low situation of the placenta. Finally after birth the remnant is incarcerated in one of the placental cotyledons of the crura of the child situated in the hemorrhage.

The author considers that angular pregnancy is frequently wrongly diagnosed as extrauterine pregnancy and hence the following scheme is a differentiating guide:

1. In angular pregnancy (a) the tumor is bluish and careful palpation will show it united with the uterus (b) the tumor is lateral and anterior and high in position (save in cases of retroversion) (c) the round ligament is outside of the tumor (examined under anesthesia) (d) the tumor hardens during uterine contraction.

2. In extrauterine pregnancy (a) the tumor is hard resistant or fluctuant never bluish and not separated from the uterus (except in case of peritoneal reaction) (b) the tumor is postero-inferior and situated in the Douglas region (c) the round ligament inside of the tumor (d) the tumor does not alter its consistency when the uterus contracts.

Points *c* and *d* are the most important for diagnosis but *a* and *b* are also should not be neglected until repeated examinations have been made and all other possibilities excluded. W. A. B. ENNAN.

Cam. on G. S. Acute Endocarditis in Pregnancy C. M. A. S. J. 98 89

The patient, primipara, aged thirty on going a negative past history. She showed symptoms of mild influenza. The next day she had a violent chill with temperature of 103 and pulse 100. Examination showed a normal condition of the heart and lungs. Marked pyrexia as per se. Upon repeated examination as negative. The bowels had been persistently constipated. The patient as pregnant sixteen weeks.

From that time on the patient had repeated high fever with elevation of temperature returning to normal. Blood examination showed a white count of from 18,000 to 21,000. On the fourth day in the hospital the patient developed a murmur at the apex and the next day murmurs were heard at the aortic and pulmonary orifices. She aborted and died three days later.

The cause of primary acute endocarditis may have been due to one of the sources as a result of the influenza from the intestinal act or of myorrhœa. I. E. B. SIKOW.

LABOR AND ITS COMPLICATIONS

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Group 1. These are certain cases of slight disproportion between the head and pelvis in 75 per cent of which spontaneous labor occurs. In the remaining 25 per cent of cases after the failure of the first hour of second stage pains to bring about the descent of the head into the pelvis one is confronted with the choice of pubiotomy, high forceps or amiotomy. Cesarean section is contra-indicated because of the danger of infection. If pubiotomy is chosen it is wise to put the sac in place then apply the forceps or do a version. If gentle traction is not successful the bone should be sawed through when extraction will be relatively easy.

Group 2. Those cases of funnel pelvis with a biachial diameter of 8 cm or less. Pubiotomy is usually the best possible procedure. In these pelvises normal delivery may occur with the biachial diameter of 5.5 cm but accompanied by a relatively long posterior sagittal diameter (the distance from the midpoint of the biachial line to the tip of the sacrum). In this type of pelvis the enlargement following pubiotomy reaches its maximum and often a normal pelvis results.

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3. The prognosis is good for both mother and child when done by experienced operator in well equipped hospital and in cases where both mother and child are in good condition. C. D. HOLMES

MISCELLANEOUS

Meyer A. W. Hydatiform Degeneration with Deductions from over 150 New Cases. *Am. J. Obst. N. Y.* 1918 LXXVIII 641.

That hydatiform degeneration is incomparably more common in the earlier than in the later months of pregnancy is substantiated by the statistics covering the material examined in the Mall collection. From these it is seen that, excepting cases of large hydatiform masses originally classed as hydatiform degeneration from inspection of the gross specimens alone, practically all the rest of the specimens are relatively small and young. This is true especially of those from tubal pregnancies and hence it may be regarded as established that hydatiform degeneration is a change which is exceedingly common in the earlier months of pregnancy and that it becomes progressively less common as the end of pregnancy is approached.

The obstetrician does not see most of the cases of hydatiform degeneration for they merely are reported as miscarriages and the specimens often are destroyed or retained unrecognized by the general practitioner or the midwife. They often are aborted spontaneously and completely with the decidua and rarely are contained in a closed decidual case when they reach the laboratory.

The conclusion regarding the greater incidence of hydatiform degeneration in the early months of pregnancy is conclusively confirmed by the occurrence of 3 of the 48 tubal specimens within the first two classes of the pathologic division of Mall and 104 of the 144 uterine specimens in the first six classes of this division. Most of the specimens in these classes are composed of villi, empty chorionic vesicles and embryos with a length of less than 20 to 30 mm.

The average period since the last menstruation in 51 of the 113 uterine specimens of this series of hydatiform degenerations was 66.6 days or two and one fourth months. The average age of 36 women aborting hydatiform moles was thirty one years.

EDWARD L. CORNELL

GENITO URINARY SURGERY

KIDNEY AND URETER

Das J E. Two Instance of Kidney Calculi One Exhibiting a Sequela of Primary Carcinoma and the Other of Persistent Sinus Formation from the Ureter to the Epididymis *J M S 9 8 387*

The author reports two interesting cases of kidney calculi.

Martin and Metz after an exhaustive review of the literature found but 108 cases of kidney malignancy associated with calculi. The cases reveal the frequency of the condition to be five times greater in the male than in the female.

The primary epithelial tumors of the pelvis and ureter are present in 6 per cent of all cases while primary epithelial tumors of the renal parenchyma are associated with calculi occurred in 35 per cent of 83 cases.

In the first case the patient aged forty seven reported that on August 1915 for the first time he passed blood in the urine in small amount not accompanied by pain. This painless hematuria was repeated irregularly for three weeks and as then accompanied by some pain in the left hypochondrium which radiated into the bladder and testicle. On October 4 he began passing large quantities of blood and had to go to bed. Six days later the fist attack of severe pain occurred and located in the left hypochondrium.

The physical examination made October 2 gave the following record. He was very weak cachectic slight tenderness of the upper left abdomen and over the urinary bladder but easily marked over the lower left abdomen. The left testicle was tender and swollen. The urine contained 50 pus and 200 blood cells to the objective and there was a small amount of albumin. The primary radiogram taken when hematuria began suggested a plugging stone at the ureteropelvic orifice.

Cystoscopy showed hyperæmia and metrectasia about the left ureteral meatus and obstruction was encountered high in this ureter. Phthalein did not appear from the side in forty five minutes. Pyelography showed that but little calcareous material in the left kidney pelvis and two free stones were demonstrated by their blurred shadows.

On November 6 a lumbar nephrectomy was performed. The kidney showed separation into two cavities and longitudinal section showed a tumor arising from the pelvis which was found to be a primary colonic carcinoma of the kidney pelvis. The patient made a good recovery.

In August 1916 an operation for left inguinal hernia and rectocele was done to relieve pain which developed in the left groin and radiated into the

testicle. This operation did not succeed in relieving his pain.

On February 25 1917 the patient entered the hospital insisting upon an exploratory operation. He was able at this time to walk with the aid of a cane but was unable to straighten his left leg without considerable pain. There was almost constant pain in the left lower abdominal quadrant. Palpation showed a firm nodular immovable mass. Upon exploratory incision made three days later mass as large as the patient's fist was observed in the left prekidney region and extended from the lower border of the twelfth rib to the anterior superior spine of the ilium and more than filled the entire left kidney fossa.

In the second week following this exploratory incision a hæmorrhage equal to one pint in quantity occurred in the midportion of the laparotomy wound. On March 23 he had a severe chill and the temperature rose to 103.2 pulse to 128 and continued until March 7 when he died the terminal picture being that of sepsis and circulatory failure.

The blood examination showed hæmoglobin 8 per cent red blood corpuscles 5720000 white blood corpuscles 1250 neutrophils 86 large mononuclears 4.

For many months marked bulging of the posterior left lumbar region. The left abdominal cavity contained a very small amount of serous fluid and a mass larger than the patient's head. Its removal was very difficult. The tumor mass was firmly adherent to the posterior parietal wall and was richly encapsulated in fat. The heart showed a small septic antemortem thrombus in the right ventricle and the myocardium was somewhat softened. Microscopic section of the tumor mass showed advanced medullary carcinoma.

The second case as a married woman aged forty to a para VIII. In August 1915 oedema of the right foot and leg with pain in the back appeared with recurrences at regular intervals for about one year.

In June of 1916 a chill fever and pain in the back came on suddenly. Shortly after this time she entered the hospital and was operated upon July 1 for kidney calculi and abscess. A pint or more of pus with numerous calculi was removed through the abdominal route. A second operation was done in September 1916 for drainage for perinephric abscess. The patient left the hospital October 3 1916 but returned five weeks later because of a recurrence of the perinephritic infection.

At the patient one half liter of offensive pus was evacuated by the postlumbar route. About six weeks later when the leucocyte count a general clinical evidence pointed to freedom from purulent

infection an exploratory incision was made for the purpose of removing tissues causative of the repeated abscess formations. It was found that there was no remaining kidney tissue and the tissues surrounding the end of the ureter which was patent showed marked cloudy swelling with some areas of fibrous change. Removal of the pathological tissues was made as thoroughly as possible and cauterization of the urethra was attempted. Obliteration of the ureter was not accomplished by catheterization as was shown by catheterization a few weeks later and the injection of collargol through the catheter. The collargol was observed passing freely from the end of the catheter to the outer opening of the sinus through the epidermis in the postlumbar region.

The patient made a prompt recovery after this last operation and has remained in good health to the present time. For a period of about eight months since the operation collargol or argyrol has been injected into the sinus about once every seven days about ten to twenty ccm being used at each injection.

THEO DROZDOWITZ

Rochet and Boulouneix. Cases of Kidney Calculus Observed at an Urologic Center (Les cas de lithiase rénale observés au centre urologique de la région). *J. diétol.* Par 1918 vii 225.

Since 1915 the authors have observed 34 cases of kidney calculus among the soldiers received at their urologic center. Only 5 of them were non infected cases, 2 of the ureter. Twenty of the 34 cases were kidney calculi involving the kidney and ureter and 3 the ureter alone. There were 6 cases of bilateral calculi and the authors consider this proportion rather high.

The authors think that renal lithiasis is frequent even in young patients. The occurrence of 34 cases during three years among young soldiers draws attention. It seems therefore that contrary to the generally admitted opinion renal lithiasis may often exist without symptom, that there is some times remarkable clinical latency, especially when it is not infected and only the appearance of infection reveals the condition.

The hard life in the trenches, the excessive use of meat, long fatiguing journeys and jolting in heavy vehicles over uneven roads may have disturbed the calculus causing traumatism and inflammation of the kidneys and subsequent infection. Many of these patients showed large kidney calculi which prior to the war had given rise to no symptoms.

The congenital origin of many cases of renal lithiasis is well known. Calculi have been found in the newly born and even in the fetus. All of this confirms the practice of radiographing the entire urinary tract in patients who complain of kidney trouble. The authors think if this were systematically done the number of cases in which a calculus would be discovered as the real cause of the disturbance would increase. The patient would benefit in every way, especially younger patients in whom this diagnosis is not usually considered.

Ten of the 34 cases observed came to operation. In every case a nephrotomy or a pyelotomy was done. In these cases the opened kidney was closed by catgut sutures without drainage, even when the calculus was infected. None of the patients with unilateral calculi died. Three of the patients operated upon had bilateral calculi. Only one of these was operated on both sides. Two patients died three and fifteen months after operation respectively. Uræmia was the main cause in one death but the cause in the other case was not clear.

W. A. BRENNAN

Culver H. Pyelonephritis. *Surg. Clin. Chicago* 1918 ii 797.

From a careful investigation of all the work on the routes of transmission of renal infection, one must conclude that under certain modifying conditions three theories still deserve recognition.

1. Directly from the bladder by way of the lumen of the ureter. This method of infection being possible only in the presence of obstruction to the emptying of the bladder or mechanical or inflammatory narrowing of the ureter, either condition causing the accumulation of urine in the kidney pelvis, in this connection Caulk suggests that there must be an incompetent ureterovesical valve associated with increased vesical pressure before infection can possibly occur by way of the lumen of the ureter.

2. Sweet and Stewart concluded that the extension of infection occurs along the lymphatics of the ureteral wall. This contention is based upon experimental work in which uretero intestinal anastomoses were made with a constant production of renal infection. Eisendrath has been able to trace the course of infection from the bladder to the kidneys through the lymphatics of the ureteral wall. This was done by making serial sections of the ureters and kidneys. These infections were produced by intravesical inoculation of various pyogenic microorganisms into dogs with previous sterile urines. As the culture of the blood taken just before death was found sterile he concluded that the ureteral lymphatics transmitted the infection and suggests that similar lymphatic connection may carry infection from the prostate and seminal vesicles in the male and from the pelvic organs of the female to the kidneys without obstruction to the urethra or ureter and with an intact ureterovesical valve.

3. The theory that renal infection for the most part is blood borne has been made a prominent one by the work of Cabot and Crabtree. They point out that such insoluble substances as fat and cinabar pass through healthy kidneys and call attention to the work of Biedl and Krause who found that colon and anthrax bacilli as well as staphylococci can pass through a normal kidney without the production of lesions. It has been claimed that 10 per cent of all pulmonary tuberculous patients pass tubercle bacilli in the urine even in the presence of apparently normal kidneys. Cabot and Crabtree obtained colon bacilli from blood cultures in 40 per

MacNider W de B A Study of the Efficiency of an Alkali to Protect the Naturally Nephropathic Kidney Against the Toxic Effect of an Anæsthetic *J Exp Med* 1918 LVIII 517

In the present investigation which was concerned with a study of the acid base equilibrium of the blood in naturally nephropathic animals during the course of an anæsthesia and also with the functional capacity of the kidneys of these animals there was shown to be a relation between the depletion of the blood of its alkali reserve with the functional response of the kidney to various diuretic substances and to the development of an anuria.

In two recent papers which were concerned with the acute nephropathy induced in the dog by uranium the author has been able to show not only an association between the degree of kidney injury and the severity of the acid intoxication induced by this metal but also that the intravenous use of an alkali in these animals would protect the kidney against the toxic effect of uranium and increase the efficiency of various diuretic substances.

In the present study an investigation is made of the ability of an alkali to protect the naturally nephropathic kidney against Grehan's anæsthetic and to ascertain whether or not a sufficient degree of protection is obtained to enable the kidney to retain its responsiveness to diuretic solutions.

Twenty eight naturally nephropathic animals were used in the investigation. Ten were used as controls while the remaining 18 were given an alkaline solution and furnished the basis for the deductions concerning the ability of an alkali to protect the kidney against the toxic effect of an anæsthetic.

On the day of experiment the animals were given 300 ccm of water by stomach tube. Three hours later under local anæsthesia from a 2 per cent solution of cocaine the control animal were given intravenously 5 ccm per kilo of 0.9 per cent sodium chloride solution while the animals which were to receive the protection against the anæsthetic were given intravenously carbonate equimolecular with 0.9 per cent sodium chloride. The animals were then anæsthetized by Grehan's anæsthetic in 60 per cent strength. One hour after giving the anæsthetic the first observations were made on the acid base equilibrium of the blood the formation of urine and the response of the kidney to various diuretic substances.

The histological study of the kidneys of these naturally nephropathic animals which received a solution of sodium chloride and served as control experiments shows changes similar in character to those described for the naturally nephropathic animals. The kidneys show a chronic glomerulonephropathy. The acute changes which have been induced in the kidneys by the anæsthetic and which have been cited also with the development of an acid intoxication and an anuria consist in an acute swelling and necrosis of the convoluted tubule epithelium and the deposition of large amounts of stainable fat in the ascending limbs of Henle's loop.

The following conclusions are permissible from the observations on naturally nephropathic animals which have served as control experiments (1) a 0.9 per cent solution of sodium chloride given to a naturally nephropathic animal prior to an anæsthetic has no effect in protecting the animal against an acid intoxication resulting from the anæsthetic (2) with a blood hydromic from such a solution various diuretic substances as pituitrin theobromine and a solution of urea are ineffective as diuretics.

A study of the animals which received a solution of sodium carbonate shows the effect of such solutions on the acid base equilibrium of the blood of naturally nephropathic animals and the efficiency of the solution in protecting the kidney against the toxic effect of the anæsthetic. These experiments when compared with the control animal demonstrate that the use of the carbonate solution conferred sufficient protection against the anæsthetic to prevent the animals from becoming anuric during the development of an anæsthesia.

The histological examination of the kidneys of the animals which have been successfully protected against the toxic effect of the anæsthetic by a solution of sodium carbonate shows the type of chronic glomerular pathology which has been previously described.

The kidneys of the animals which have shown an early protection against the anæsthetic but which later in the experiments showed a lack of protection by failing to respond to diuretic solutions and by finally becoming anuric have like the control animals developed an acute swelling vacuolation and necrosis of the convoluted tubule epithelium and have shown a large amount of fat in the ascending limbs of Henle's loops.

The present investigation has shown that naturally nephropathic animals may be protected in varying degrees against the toxic effect of an anæsthetic by the use of an alkaline solution and that failure to protect such a kidney during an anæsthesia is associated with a rapid depletion of the blood of its alkali reserve and the development of an acid intoxication. This change in the acid base equilibrium of the blood in these animals has in turn been associated with an acute swelling and necrosis particularly of the convoluted tubule epithelium and the development of an anuria. From this observation there is no evidence which would justify the conclusion that the increase in hydrogen was acting as such upon the epithelial element of the kidney in the cause for the acute swelling and necrosis of the epithelium. The actual way in which an increase of hydrogen leads to an injury of the epithelium and the mode of action of an alkaline solution in deferring or preventing this injury remains a problem for future solution.

The author's conclusions are as follows:

1. A 0.9 per cent solution of sodium chloride when given intravenously to anæsthetized naturally nephropathic animals is not effective in preventing

the development of an acid into icatation and the associated kidney injury

2 A solution of sodium carbonate equimolecular with a 0.9 per cent solution of sodium chloride when given intravenously to anesthetized naturally nephropathic animal confers a variable degree of protection to the kidney

3 The degree of protection conferred by the alkaline solution is associated with the ability of the solution to maintain a normal acid base equilibrium of the blood of the anesthetized animal

Th Dr z

BLADDER URETHRA AND PENIS

Judd E S Diverticula of the Bladder 19
S g Phila 981 98

Diverticula of the bladder may be congenital instances having been reported in infants and small children and it could seem that in most of such cases there must have been some congenital defect in the bladder as a primary etiological factor. It has been suggested that the weak points in the wall of the bladder may be at the site of one of the embryonic buds. It is possible that the embryonic weak point might be a factor in certain cases. In the experience of the author the opening of the diverticula is not far from an urethral meatus and the preternum have a proximity to the ureter. The author quotes Cabot who reports an interesting case in which bilateral diverticula were interfering with both ureters. In one of these cases the ureter emptied into the sac of the diverticulum and it was necessary to divide the ureter and implant it into the new opening in the bladder. In the several other cases in which the urethral opening as marginal the adjoining mucous membrane as turned into the bladder closure the meatus being preserved. A suggestion is made to employ this method whenever possible.

The other two distinct types one in which the diverticulum is associated with an enlargement of the prostate and which has led some observers to believe that this is the result of the obstruction from the prostate the other type occurs in much younger men in whom there is no evidence of obstruction from any cause. The latter patients will frequently have more residual urine than those with an enlarged prostate and a diverticulum. The consensus of opinion seems to be that a congenital deformity or lack of development is a factor in all of these cases.

Many cases have been cited to show that obstruction is not a factor in the causation of diverticula. It has been demonstrated repeatedly that in case there is an obstructing enlargement in the prostate associated with diverticulum of the bladder the removal of the obstruction will not relieve the situation and furthermore the removal of the prostate and diverticulum will completely relieve all symptoms. This point is emphasized particularly because many of the patients with prostatic trouble

who continue to have so called cystitis and residual urine after the obstruction has been removed are in reality suffering from diverticula and if a careful examination is made for a diverticulum at the time of prostatectomy in such cases this error will be avoided.

Diverticulum of the bladder occurs almost exclusively in the male very few cases have been reported in the female. The characteristic feature of the clinical syndrome is a feeling that the bladder is not emptying. This comes on almost immediately after voiding with the ability to repeat the act of voiding and the second time to pass a considerable amount of urine. Frequency and burning with difficulty of urination are present in most of the cases. It is almost a pathognomonic sign of the existence of a diverticulum to have a considerable amount of urine thick with pus escape from the catheter just at the time the bladder was supposed to be entirely clean.

While diagnosis is suggested by the clinical features the accurate determination of the condition rests with the cystoscopic examination and the employment of the leaded catheter and X-ray

by the making of a cystogram which is of great value in many instances. In other instances the passing of the diverticulum into the bladder is very small and difficult to see but the colloidal silver solution will readily pass into it. The diverticulum can be seen when the roentgenogram is made. The present reports based on a group of 44 patients reported upon between 1908 and 1918. All of the patients were males arising in age from eighteen to sixty-three years.

In considering the literature and the record at the Mayo Clinic it stands out clearly that palliative treatment and any other form of treatment other than excision of the diverticular sac has not given good results. Something can be accomplished by preliminary shrinking the bladder and by employing a method to stimulate renal function in cases in

which it seems necessary. Those who have had most experience with these cases are unanimous in the feeling that the proper treatment for any of these diverticula is complete excision of the sac and that any treatment less radical will not be satisfactory. The experience of the author bears this out.

The operation consists in first making a good sized opening into the bladder through the perivesical space and locating the opening of the diverticulum after all the pus and mucus have been cleared away. The prevesical tissue should be protected against infection in every way possible. Ingenious methods have been devised for filling the diverticulum with an air filled rubber bag (Lerche) and also for filling the sac with gauze which is packed to the sac before the dissection to facilitate its removal. Such devices seem to help considerably. Whenever possible the author prefers to pass one or two finger into the diverticulum and then make the dissection through the prevesical tissues down to the sac.

which is also being lifted out by the fingers within it. After the sac has been completely freed from the surrounding fatty tissue the neck is severed the opening in the bladder is closed and a drain is placed in the prevesical space which the sac occupied. The suprapubic opening in the bladder is closed with the exception of the place for the drainage tube.

Summarizing briefly it may be said that diverticulum of the bladder is much more common than has been realized and that the condition is perfectly amenable to surgical treatment.

For diagrammatic sketches of diverticula and their operation the reader is referred to the original article.

THEO DROZDOWITZ

Schmidt L. E. Technical Errors in the Operative Treatment of Urethral Stricture. *Surg Clin Chicago* 1918 n 813

Frequently unsatisfactory results are obtained in the operative treatment of urethral stricture through failure to carefully split the entire urethra in the stricture area and failure to remove the chronic inflammatory tissue which is surrounding these portions.

It is necessary to follow the urethral mucosa. If at all possible the upper wall of the urethral mucosa should remain intact no matter how much of the urethral wall it is necessary to remove. Then when the catheter is placed correctly it remains at least in contact with the urethral mucosa the entire distance from bladder to the external urethral orifice.

Another reason for unsatisfactory results in this line of work is the use of such instruments as the Gutteris guide and others of this type. These instruments have a groove on the upper surface so that they can be used as grooved directors. If the instrument has been plunged into the bladder and the withdrawal of the mandrin permits the urine to escape the operator believes that he has entered the bladder through the urethra but the instrument is plunged through the prostate and often times even into the bladder at a point above or below the internal urethral orifice. Then the little groove is used to direct the scalpel and the incision is made sufficiently large for the introduction of a catheter. Of course a perineal drain can also be introduced at the same time.

In these cases it is necessary to reoperate correct the false passage and also to remove the inflammatory mass as well as to find the centripetal end and to obtain a continuous mucosa if this is possible.

Another cause of unsatisfactory results has been that the operator has permitted the retrostrictural pouch to persist and this will cause dribbling at the end of the urinary act. This error can be avoided by excision of the lower portion of the sac sufficient mucosa remaining to bring the edge together over the catheter which has been introduced into the bladder.

THEO DROZDOWITZ

Cathelin F. Classification of the Disturbances of Sphincteric Control Resulting from Wounds and Contusions of the Lumbosacral Region. *J Urol* 1918 n 329

Cathelin's report is based on 63 cases and is confined to lumborenal concussions and contusions all of them caused by missiles of war with or without disturbance of sphincteric control.

Disturbances of sphincteric control (retention or incontinence) due to war wounds are quite frequent and their correct interpretation is difficult because of the great variety of symptoms which obscures the similarity of cause. Nevertheless these two phenomena so clinically dissimilar i.e. incontinence and retention are physiologically speaking in the same class and clinically they appear successively or alternately in a given individual. They usually result from lumbar or sacral concussion and from wounds of the pelvis or of the adjacent regions although incontinence may be primary and retention secondary the opposite (primary retention and secondary incontinence) is the usual condition.

Occasionally the appearance of disturbance of sphincteric control is delayed. The anal sphincter is sometimes involved but less often and less gravely than that of the bladder. Disturbance of the sexual function may show itself in the form of priapism but oftener as impotence. Concussion or contusion of the cerebrospinal tract causes symptoms that are essentially transitory amenable to treatment and to permanent cure as contrasted with the symptoms resulting from actual wounds of the central nervous system. Disturbance of sphincteric control is the most persistent symptom and is one of the dominant signs of this condition.

It is extremely difficult if not impossible always to classify the symptoms anatomically according to the segments of the spinal cord involved. In order to distinguish accurately the segment or segments the injury of which has occasioned incontinence or retention of urine it is necessary to follow a definite diagnostic plan. The author suggests this new classification.

1. Lumborenal and sacral concussion with or without hæmaturia with or without disturbance of sphincteric control but without external wound.
(a) lumbar concussion without sphincteric disturbance characterized by pain in the spine.
(b) lumbar concussion with sphincteric disturbance and with or without other motor disturbances.
(c) lumborenal concussion with hæmaturia and with or without sphincteric disturbance and with (rare) or without lumbar contusion.
(d) sacral and pelvic concussion with vesical or urethral bleeding and with or without sphincteric disturbance (concussion of the bladder).

Sphincteric disturbance with lumbosacral or pelvic wound and with or without temporary or prolonged paraplegia.
(a) sphincteric disturbance due to lumbosacral wound but without prolonged paraplegia.
(b) sphincteric disturbance with lumbosacral wound and prolonged or permanent para-

pleg a (c) sphincter disturbance with round or foreign body proximate to the lumbosacral region (d) associated disturbance of the sphincters of the rectum and bladder after pelvic and (e) sphincter disturbance due to cerebral tumor.

As to prognosis the author states that although the affection is that the hamatoma is usually usually disappear rapidly while the lumbar pain and the sphincter disturbance may be more persistent.

The curious feature of these injuries is the lack of association noted between disturbance of the external sphincter and that of the internal. Five cases had faecal retention, but there was no faecal incontinence yet there is only a few millimeters between the spinal center producing the retention of these sphincters.

The treatment is often efficient. For the lumbar pain rest and hot compresses for the hamatoma. Lechele after retention of hexamethylenamine for the faecal incontinence epidural injection. Should the incontinence be detected tentatively with a catheter of the retention of the multiple catheterization of the rectum.

GENITAL ORGANS

Pain in the Testis and Epididymis
The Etiology and Treatment of Testicular Neuralgia Caused by Adhesions of the Vaginal Nerve (Nerve) to the Epididymis and Testis. S. Ed. B. A. 98.

The author draws attention to the testicular pain which clinically belongs in some patients to the out of organ lesion being found to justify it. Such pains in general have been considered a testicular testicle or testicular neuralgia. Sometimes it is noticed in patients who have been operated for varicocele but it is not proportionate to the volume of the varicocele and small varicocele dilatation may be accompanied by great pain. Some patients who have had testicular pain have committed suicide.

Patients subject to this affection usually have the history of some past venereal disease or of an inflammatory process involving the genital tract subsequent to an infection or trauma.

In all these patients the pain in the author's opinion is due to alterations in the tunica vaginalis as he has been able to prove by autopsy in his clinic. The lesion which causes the testicular neuralgia is a fibrous thickening of the tunica vaginalis. Such lesions may be primary or secondary following inflammations of the epididymal testicular tract and they follow the intensity of the varying from a simple adhesive band type which constitute a true total adhesive vaginalitis. Between the two extremes all types of variation may be observed clinically. Owing to the fibrous vaginalitis the serosa is usually thickened and loses its elasticity. The existence of such a condition is the clue of the affection known as testicular neuralgia.

The literature does not help much as regards this affection. In 1912 in the *New York Medical Journal* Bellenger and Elder reported doing an orchectomy on a patient with intense testicular neuralgia in which they observed on the extirpated testicle a number of adhesions involving the epididymis and vas deferens. They thought these adhesions might have been the cause of the neuralgia. The 8 cases which I have now reported and give details of in which he operated I believe fully prove the assumption of Bellenger and Elder.

It explains the pathologic process of the affection and how the formation of the testis subsequent to a chronic epididymal inflammation creates fibrous adhesive bands the compression of which gives rise to the so-called neuralgic pains.

Diagnosis is not always easy but with some patience and careful attention to the symptoms it can be made with much difficulty. The scrotum is large, flaccid and smooth unless varicocele is present in which case varicose dilatations are seen. There may be hydrocele, hematocele or cystic. The pain is usually unilaterally augmented in volume in the lower part and can be localized usually in the inferior extremity although not absent from the head and body. One of the most important signs is obtained by palpating the testicular surface. Normally it is felt only under the palpating finger through the scrotal surface but in an adhesive varicocele the irregularities are felt slightly prominent and enlarged at the ends of the finger and all over the organ but more especially in the region of the high varicocele and under the inferior extremities of the epididymis.

I lose sight of the treatment of the affection in surgery with the object of destroying the adhesions which exist and freeing the testicle from the intense compression action which they exert. The treatment which he employs is the same as that employed for the radical cure of hydrocele. It is done under local anesthesia. He drains the nerve for part of the wound for twenty-four hours.

The results are most satisfactory. All the patients operated have been cured and Posados has never observed a recurrence. He hopes that others will try this procedure so as to establish a definite and effective method of treatment for this affection.

W. A. BRENNAN

Crawford J. P. Ineal P. tatectomy J. I. St. M. S. 98 355

The preliminary treatment is important as the operation itself. The essential thing is preliminary drainage which can be accomplished by an indwelling catheter in the urethra. The few cases that do not require a residual catheter can be catheterized three or four times a day. The phenolsulphoephthalein test is used as the indicator of the renal function.

Precautions and plenty of sodium bicarbonate during the early treatment will largely prevent uraemia and acidosis occurring after the operation.

It is a good rule to keep all of these cases under observation and treatment for at least a week during this period. Every case is cystoscoped to determine the character and location of the obstruction and the presence of diverticulum of the bladder.

The author has used ether and nitrous oxide and oxygen for anesthesia; he prefers nitrous oxide.

In enucleation of the hypertrophied prostate Crawford uses the technique of Young. An inverted V shaped incision is made in the perineum from below the bulbus urethra to the inner sides of the ischial tuberosities. The fascia is split and with the finger and the handle of a knife the perirectal fossæ on each side are opened up. The apex of the incision is completed. The central tendon is cut. The remainder of the exposure of the prostate is simply a gentle dissection of the recto urethral muscle from the membranous urethra.

The urethra is split just in front of the prostate. The sound in the urethra is withdrawn and the prostatic tractor inserted into the bladder through the incised urethra.

The prostate is pulled forward and the fascia covering it is cut close to the urethra and carefully pushed backward. This brings the prostatic capsule well into view. Frequently the prostate can be brought nearly to the skin margin.

An incision is made on each side of the presenting gland capsule and through these gaping incisions the hypertrophied lobes are enucleated.

Insertion of drainage tubes, packing of a tag of gauze in each side of the prostatic capsule and closure of the incision completes the operation.

The particular point in the method is that this is an extra urethral operation, not intra urethral.

The whole operation is under the guidance of the eye and is an exact and definite surgical procedure. The absence of great trauma and the slight loss of blood greatly lessens the occurrence of shock.

Following the operation drainage tubes are left in the bladder twenty four hours through which the bladder is irrigated sufficiently to keep it free from clots of blood.

At the end of twenty four hours the tubes in the bladder and the gauze packing in the prostatic cavity are removed. The third day the bowels are moved with castor oil and soft diet is given. The wound gradually closes and urination is partly through the urethra at the tenth day on the average.

Epididymitis has occurred during convalescence in several cases and in practically every case there is a history of epididymitis previous to the operation. All cases have been relieved in a few days by the application of ice.

In considering the application of perineal prostatectomy it may be mentioned that there is one type of obstruction that is not adapted to this operation, i. e. the small fibrous obstruction which is best treated by the urethral punch under local anesthesia.

The author cites a number of cases where the final results of these perineal prostatectomies have been uniformly good. Incontinence has not occurred in a single case.

Stricture has not occurred in any case. The few cases which have had a tendency to urgency and frequency have been easily corrected by hydraulic dilatation of the bladder and exercise of the internal and external sphincters by stopping and starting the stream of urine.

THEO. DROZDOWITZ

pleg a (c) sphincter ic di tu bance v th ound or
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It is a good rule to keep all of these cases under observation and treatment for at least a week during this period. Every case is cystoscoped to determine the character and location of the obstruction and the presence of diverticulum of the bladder.

The author has used ether and nitrous oxide and oxygen for anaesthesia; he prefers nitrous oxide.

In enucleation of the hypertrophied prostate Crawford uses the technique of Young. An inverted V shaped incision is made in the perineum from below the bulbus urethra to the inner sides of the ischial tuberosities. The fascia is split and with the finger and the handle of a knife the perirectal fossae on each side are opened up. The apex of the incision is completed. The central tendon is cut. The remainder of the exposure of the prostate is simply a gentle dissection of the recto urethralis muscle from the membranous urethra.

The urethra is split just in front of the prostate. The sound in the urethra is withdrawn and the prostatic tractor inserted into the bladder through the incised urethra.

The prostate is pulled forward and the fascia covering it is cut close to the urethra and carefully pushed backward. This brings the prostatic capsule well into view. Frequently the prostate can be brought nearly to the skin margin.

An incision is made on each side of the presenting gland capsule and through these gaping incisions the hypertrophied lobes are enucleated.

Insertion of drainage tubes, packing of a tag of gauze in each side of the prostatic capsule and closure of the incision completes the operation.

The particular point in the method is that this is an extra urethral operation, not intra urethral.

The whole operation is under the guidance of the eye and is an exact and definite surgical procedure. The absence of great trauma and the slight loss of blood greatly lessens the occurrence of shock.

Following the operation drainage tubes are left in the bladder twenty four hours through which the bladder is irrigated sufficiently to keep it free from clots of blood.

At the end of twenty four hours the tubes in the bladder and the gauze packing in the prostatic cavity are removed. The third day the bowels are moved with castor oil and soft diet is given. The wound gradually closes and urination is partly through the urethra at the tenth day on the average.

Epididymitis has occurred during convalescence in several cases and in practically every case there is a history of epididymitis previous to the operation. All cases have been relieved in a few days by the application of ice.

In considering the application of perineal prostatectomy it may be mentioned that there is one type of obstruction that is not adapted to this operation, i. e. the small fibrous obstruction which is best treated by the urethral punch under local anaesthesia.

The author cites a number of cases where the final results of these perineal prostatectomies have been uniformly good. Incontinence has not occurred in a single case.

Stricture has not occurred in any case. The few cases which have had a tendency to urgency and frequency have been easily corrected by hydraulic dilatation of the bladder and exercise of the internal and external sphincters by stopping and starting the stream of urine.

THEO. DROZDOWITZ

SURGERY OF THE EYE AND EAR

EYE

Frenkel H Pogn i and T eatm nt of Ocul
Wounds w th Pen tation f Fo eign Bodi
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The prognosis of eye injury with penetrating foreign bodies depends on many circumstances the time of the extraocular infection of the body etc The author has been very successful in the treatment of the different cases of penetrating wounds of the eye by the use of magnet and the use of the magnet in cases of intraocular foreign bodies obtained by the fracture of the globe

The prognosis of eye injury with penetrating foreign bodies depends on many circumstances the time of the extraocular infection of the body etc The author has been very successful in the treatment of the different cases of penetrating wounds of the eye by the use of magnet and the use of the magnet in cases of intraocular foreign bodies obtained by the fracture of the globe

The author thinks that the danger of the magnet is not so great as is generally supposed. The author has used the magnet in many cases of intraocular foreign bodies and has obtained good results. The author has used the magnet in many cases of intraocular foreign bodies and has obtained good results.

Campbell C A N u f bromat i of the O bit
i j O p h l 9 8 6

Neurofibromatosis of the orbit. The author has treated many cases of neurofibromatosis of the orbit with good results. The author has treated many cases of neurofibromatosis of the orbit with good results.

Di ncan R Glioma of the Retina with a Repo
of Thre Cases T eated with Rad um Am J
Ophl 9 8 7 5

The author notes the peculiar yellow reflex known as the amaurotic eye—the increase in tension and the lack of inflammatory symptoms. The three cases reported were treated with radium 5 to 125 mgm screened with 0.5 mm of platinum and 1.3 mm of brass covered with gauze and rubber. The author believes that these cases are too few to justify any definite conclusions about radium in preventing the use of f radium the percentage of recurrences can be lessened.

Hansell H F A Consideration of the Etiology of
I llyctenul
Chld 9 8 6

The character of the conjunctival involvement in systemic disease or focal infection varies according to the local idiosyncrasy and while one can easily accept in some patients the tubercular origin of the disease or if the disease as a should be tuberculosis the conjunctival disease may take other forms such as sclerolymphatic keratitis numerous fine point of infiltration keratitis secondary to intolupus

Caldbeck studied 30 cases of phlyctenular disease and of the eye had phthisis 16 had some other form of ulcerative conjunctivitis or tuberculous bones 3 had a positive reaction 18 had adenoid and disease in the nose. The tubercle bacillus was found in 12 in microscopic sections.

Wirtz quoted as having investigated 21 cases of phlyctenular disease and in every one of the conjunctiva the bacilli were found.

The immediate exciting causes are various and an effect of the inflammation has resulted in a prompt healing up of the inflammation. The case of a girl of 12 years old in whom an intractable phlyctenular disease healed quickly after the extraction of an infected molar tooth.

Cobson is convinced that all clinical experimental and pathological evidence points to tubercle as the cause of phlyctenular disease and while most human cases are not given with a sweeping statement of the evidence clearly indicate a grade underlying in the disease.

Hilatarik J Ophl 9 8 1 7 9

Plasmoma of the Conjunctiva. The author describes the cases histologically as epithelioma of the conjunctiva the subconjunctival tissue being permeated with plasma cells in areas of necrosis of Russell's bodies in

other parts of the field histologically resembling trachoma. The author regards plasmoma of the conjunctiva as an inflammatory granuloma associated with trachoma and not as a distinct neoplasm.

L. J. GOLDBACH

Pfingst A O A Mixed Tumor of the Lachrymal Gland *South M J* 1918 vi 537

Report is made of a tumor of the lachrymal gland of the left eye in which the symptoms were first noticeable to the patient four years previously. The mass gradually became larger, pushing the eye downward and causing it to become quite prominent. There were no other symptoms such as pain or diplopia.

Removal of the growth was made through a skin incision there having been previous X-ray plates made in which there was shown to be no communication with the sinuses nor was there evidence of an osseous growth. The microscopic diagnosis was a mixed tumor of the lachrymal gland.

Reference is made to the report of Worthin (*Arch Ophth* 1901 p 631) in which a case of tumor of the lachrymal gland is reported with detailed microscopic findings and an exhaustive review is made of 132 cases wherein an effort is made to bring about a better classification of tumors of the lachrymal gland. From his studies Worthin concluded that most of the tumors of the lachrymal gland were of endothelial origin similar to those of the parotid and submaxillary salivary glands.

Three years later Verhoeff (*J Med Research* 1904) published his microscopic findings in cases of tumor of the lachrymal gland removed at the Massachusetts Eye and Ear Infirmary. These studies led Verhoeff like Worthin to the conclusion that most of the growths of the lachrymal glands are mixed tumors and analogous to tumors of the salivary glands.

It is reported also that Wood (*Ann Surg* 1904) reported 54 cases of tumors of the salivary glands in which he concludes that 95 per cent of these growths are mixed tumors and that their parenchyma is of an epiblastic nature.

Reference is made to an exhaustive report and compilation of literature on tumors of the lachrymal gland by Greeves (*Roy Lond Ophth Hosp Rep* 1914). It includes the compilation of Worthin and adds 42 cases with minute histological details of all. Greeves suggested a basis for classification of tumors of the lachrymal gland dividing them into two main

groups (a) mixed tumors and (b) tumors having distinct histological structures characterized by an overgrowth of small round cells in the gland stroma. Of the mixed variety three types are recognized. These tumors occur in adult life and are largely of slow growth. They never lead to general metastasis. In the few cases where death was reported due to the direct spread of the tumor it was from the growth penetrating through the supra-orbital plate by pressure. Their proximity to the brain speaks for their early removal.

The author refers to the necessity of distinguishing the second group from sarcomata. Histologically they resemble sarcomata but do not run the clinical course of malignant growths and only in exceptional cases have they shown malignant tendencies.

J. S. CLARK

Kelsey T W Obstruction of the Lachrymonasal Duct *Northwest Med* 1918 xvii 298

The normal lachrymonasal duct is probably never pituitous the tears passing through it by capillary gravity and muscular contraction. Being enclosed in a solid bony canal with the walls of its lumen in contact little engorgement or cicatricial formation is necessary to make the passage impervious.

Results of operative work point to the increased lachrymation as a secondary process due to the reflex stimulation of the lachrymal gland from the toxic focus in the diseased sac and with the removal of the lachrymal sac this reflex ceases and the normal flow of tears is usually only sufficient to moisten the cornea.

Early treatment consists in irrigation with zinc sulphate or boric acid solution followed by adrenalin and cocaine which will contract the oedematous tissue and allow passage of fluid but in long standing disease with thickened lining membrane this effect can no longer be produced. The use of stilettes and cannulas in these cases has particularly been abandoned and the probe is rapidly coming in to disuse.

Extirpation of the tear sac in its entirety has been quite generally advocated for several years the only objection being the comparatively difficult technique and the necessity of removing all the sac to obviate fistula.

The several operations proposed for draining the sac directly into the nose are disappointing in that the false passage usually closes by cicatricial contraction leaving the condition as bad as before.

S. S. HOWE

SURGERY OF THE NOSE THROAT AND MOUTH

THROAT

Delavan D B Ea ly D gno f Intral yng l
Carcinoma \ i St J M d 9 8 36

The author discusses first the local symptoms and second the means essential to the larynx by which the diagnosis may be sustained.

The local symptoms presented in the order in which they are apt to occur are (1) hoarseness (2) a local lesion (3) the occasional occurrence of a peculiar form of pain and (4) muscular infiltration. The hoarseness is generally permanent and progressive. At first nothing more than a slight arc of hyperæmia on a local cord may be seen to account for the hoarseness.

After a while the local lesion may take the appearance either on the vocal bands from the subglottic larynx or from the aryepiglottic folds. If below the cord it will not be observable in the early stage. It may assume one of several different forms (1) a distinctly localized and somewhat superficial ulcerence arising in character resembling a papilloma and it may or may not be surrounded by a narrow red zone of inflammation (2) a deep fissure like growth with a reddened edge around the surface in some cases presenting an uneven fringed like surface upon the vocal cord (3) a variety beginning indefinitely and extending gradually to the periphery of time in the form of a general diffuse infiltration of the ventricular bands. In the sacculus laryngis in the aryepiglottic folds it usually appears in the form of a definite growth pink in color and of an uneven or nodulated surface.

The peculiar character of the pain in the early stages is a distinct sensation like that caused by the prick of a needle coming on suddenly and without premonition and quickly dying away and distinctly originating at the site of the growth.

The first manifestation of muscular infiltration is when there is present a commencing failure of complete motion noticeable on the affected side of the larynx.

Glandular involvement dysphagia dyspnoea and cachexia as well as the lancinating pain extending from the larynx to the pharynx or the ear are not to be expected in the early stage of laryngeal cancer.

As to the means essential to the larynx by which the diagnosis may be sustained the author mentions (1) age (laryngeal carcinoma being unusual before the age of forty) (2) sex (90 per cent occur in males) (3) the absence of symptoms suggesting other diseases or conditions likely to simulate laryngeal cancer such as syphilis tuberculosis gout lupus benign growths pachydermia laryngis chronic laryngitis perichondritis and laryngeal paralysis.

The author also draws attention to the fact that laryngeal carcinoma may not only resemble other forms of disease but may actually be associated with them hence a diagnosis of one of the above mentioned conditions does not preclude the possibility of the presence also of carcinoma.

Microscopic findings must be the final proof in case of doubt but tissue should never be removed for this purpose unless the operator is prepared to proceed at once with the radical operation in case the diagnosis of cancer is established. This can be done by doing a preliminary thyrotomy and awaiting the examination of frozen sections.

The author warns against the unreliability of reports based on examinations of peripheral portions of the growth and quotes the warning of Macke that excision of fragments of tissue for microscopic examination is objectionable because (1) it opens the way to autoinfection (2) it stimulates the growth of the disease and (3) it often includes error and misleading.

Nothing can be expected from transillumination fluoroscopy skiagraphy or the Abderhalden test.

Otto M. Rott

MOUTH

Clark W L. Cancer of the Oral Cavity. J. W. and Throat Treatment by Electrothermic Methods or in Combination with Surgery. The Roentgen Ray and Radium with an Analysis of 200 Cases So Treated. J. Am. Med. Ass. 9 8 1 365

Clark recommends electrothermic methods as best adapted to the treatment of cancer within the mouth. The method he refers to are electrodesiccation and electrocoagulation. The first method is one by means of which malignant growths of small or moderate size may be destroyed by the utilization of heat of just sufficient intensity to desiccate the tissues and is produced by monopolar high frequency current. The desiccation method is of advantage when the lesion is localized and a good cosmetic result is desired. Electrocoagulation is produced by a bipolar high frequency current. It is more penetrating and intense in action than the desiccation method. It is utilized to destroy large growths.

The distribution of the cases treated and the results obtained are herewith presented. The areas involved were upper lip lower lip upper jaw alveolus and hard palate alveolus (lower jaw) and floor of mouth tongue buccal surface antrum tonsil pharynx epiglottis larynx base of tongue and esophagus. Advanced lesions involving several structures in the mouth.

W. N. F. Russell

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SURGERY OF THE NOSE THROAT AND MOUTH

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APRIL 1919

International Abstract of Surgery

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APRIL 1919

COLLECTIVE REVIEW

PRIMARY SUTURE OF WAR WOUNDS

By IOGER T. VAUGHAN, M.D., F.A.C.S., CHICAGO

THE development of a technique for the successful treatment of open wounds by excision followed by primary suture has been one of the great surgical accomplishments of the present war. This technique is bound to be carried over into civilian emergency surgery by our returning army surgeons and will greatly benefit those patients receiving open injuries in industrial accidents, railway collisions and the like.

These advances are the culmination of a relatively rapid process of evolution in wound treatment, surgical progress keeping step with the stages of the war. Our grasp of the fundamental principles underlying primary suture will be more secure if we follow the series of steps which have led up to the present practice and understand the reasons for abandoning earlier procedures for the later.

Primary suture of wounds as now practiced stands in seeming contradiction to certain surgical ideas commonly accepted before the war. Previous to 1914 it was generally conceived that a wound already actively contaminated could not by any technique be closed as though aseptic. This result is now however easily accomplished and yet there is no original element in the method. It is merely the successful combination of a number of altogether logical surgical procedures already known for a long time. Only the combination is new.

Achuthsen of Berlin proposed the excision and primary suture of open contaminated wounds as early as 1910, but his article at that time aroused little notice. In 1915, after having used the

method extensively in army service, he published his results. The method then received the attention in the central empires which it deserved and since then has been extensively used by German and Austrian surgeons.

Among English surgeons H. M. W. Gray was one of the first to consider the feasibility of primary suture in war wounds, and his experimental work and publications were influential in winning over English military surgeons to primary suture. To the French surgeons, however, belongs the credit of having most generally adopted and popularized primary suture at a relatively early date during the war, and French publications have been of the greatest value in disseminating information concerning the value and the technique of this method of wound management.

PERIOD OF EXPECTANT TREATMENT

When the war broke out, army surgeons labored generally under the impression that war missiles were relatively harmless so far as bacterial infection was concerned. In the summer of 1914, particularly during the period of open fighting, surgeons were generally content to disinfect the wound of entrance with tincture of iodine, remove visible foreign bodies and apply an aseptic dressing. Such cases as were operated upon were either vascular injuries, extensive wounds necessitating limb amputation, penetrating wounds of the skull or abdomen, or infected wounds arriving at the base with fully developed suppuration. Other cases after dressing were placed under observation. During the period of open fighting these methods were probably as successful as

during the Balkan wars but with the setting in of trench warfare after the Battle of the Marne the results obtained by this practice became strikingly unfavorable. In the majority of cases fever set in after twenty-four to forty-eight hours pain became progressively more and more severe and active and violent suppuration started in the wound with abundant foul discharge and marked inflammatory reaction. Active surgical measures became urgently necessary. In spite of incisions pus would continue to appear in neighboring intermuscular spaces and new and numerous incisions had to be made. The general condition of such patients declined rapidly. Gas gangrene, secondary hemorrhage and persistent suppuration were very frequent. Deaths from pyæmia were numerous and patients who ultimately recovered remained on the sick list for a long time could not be transported and very frequently were permanently invalided or crippled. This surgical period lasted up to about the middle of November 1914.

PERIOD OF INCISION AND DRAINAGE

In consequence of the above observations army surgeons came to consider all wound primarily infected even when seen before clinical evidence of inflammation had developed. Accordingly it became the practice for all patients to be operated upon immediately upon entrance to the hospital without waiting for symptoms of inflammation to develop. Wounds were widely incised and foreign bodies such as projectiles, clothing and the like removed. The wound was dressed with sterile gauze and immobilized. This period covers the end of 1914. It marked a great improvement over the expectant method. But all wound exhibited a stage of suppuration and some elimination of muscle fascia and bone splinter by sloughing. Fever even in favorable cases usually lasted a fortnight. Dressings had to be changed two or three times a week, sterile gauze being used usually without irrigation.

PERIOD OF WOUND TRIMMING AND EXCISION (DEBRIDEMENT)

The next step in improvement was to remove all avascular tissue at the time of the initial incision and all those structures evidently dead or destined to die. Foreign bodies were extracted as previously. The operation during this period consisted in following the track of the projectile through the tissues removing injured skin, connective tissue, fat and fascia, muscle and bone fragments. All that experience had taught was doomed to slough and cause continued suppura-

tion. The operation was then ended by dressing the wound with sterile gauze. Slight fever usually followed in these cases from 99 to 101 degrees but it lasted only four or five days as a rule and most wounds rapidly became pink and healthy looking and healed normally by granulation. This method was practiced by a number of surgeons early in 1915.

PERIOD OF FIXATION WITH IODINE

It gradually came to be understood that in excising the contaminated portions of the wound the clean portions exposed received a surface inoculation. Accordingly the practice was taken up in many hospitals of trying to fixate these surface bacteria with tincture of iodine just as they are fixed with iodine in sterilization of the skin by the Grossich method. The wound must first be completely dried with gauze (some surgeon also recommend the hot air blast following complete hæmostasis) before applying iodine.

The iodine period may be said to have begun rather early in 1915 although to be sure some surgeons used iodine in this way still earlier in the war and some in civilian practice even before the publication of Grossich.

CARREL METHOD

Before the middle of 1915 Carrel's first technique was published. It was tried by many surgeons some with indifferent and some with very good results while others found as did Lemaître that it brought back the evil days of 1914. We shall not here go into the reason for the success of the method in some hands and the failure in others but will simply pause to note that Carrel in his latest publication (*The Treatment of Infected Wounds*, 1917) recommends primary excision (p. 61-95) as the method of choice whenever the patient reaches the surgeon at a sufficiently early date usually not more than eight to ten hours after the receipt of the wound but he neglects to state when he uses primary suture if at all though he does use delayed primary or early secondary suture in 90 per cent of cases (p. 185-186).

PERIOD OF PRIMARY SUTURE

By the middle of 1915 a number of surgeons were already practicing what practically amounted to primary suture as now understood. Some of them had tried antiseptics and had given them up and others had gradually evolved a method of primary suture in the course of their operative experience. H. M. W. Gray published his experimental and clinical results about this time. Arhausen in Germany, Bárány and Panzi in

Austria published the results of their experience and in France Lemaitre Tissier Duval Depage and others popularized the method. Primary excision gradually became a more extensive operation. The entire exposed surface of the wound came to be excised including skin fat fascia muscle and bone fragments only nerves and large blood vessels being left untrimmed. Not only does primary excision control the development of suppuration but it is also of the greatest importance in preventing the development of tetanus as brought out by Sir David Bruce in the preliminary report of the British Tetanus Commission at Paris in October 1918 at the meeting of the Red Cross Research Society.

Primary suture was tried first in freshly excised wounds appearing relatively clean and then was practiced with increasing frequency as the results obtained became continually more favorable due to increasing experience and skill with the method. The slow healing by granulation and the extensive scars formerly seen were thus done away with to a large extent. In those patients deemed not suitable for immediate suture and who remained under the surgeon's observation sufficiently long delayed primary suture was often performed two or three or even four days after the primary excision provided that the wound was seen to be clean and relatively free from micro organisms by the smear test. Where laboratory facilities were lacking clinical appearances alone had to act as a guide to delayed suture but success was not so uniform as where bacteriologic aids were in use.

In the early days of the war no case did worse than those primarily sutured as Bowlby aptly reminds us and the recollection of these cases was one reason why some surgeons were slow to give up secondary closure and why others adhered to or still cling to the Carrel method. Primary closure was first used extensively on wounds of the knee joint following the observation that those wounds left alone or closed after preliminary cleansing terminated more successfully as a rule and with less suppuration than the cases in which through and through drainage was inserted. Bárány and other Austrians practiced primary excision and closure upon wounds of the scalp and brain after observing that secondary closure nearly always resulted in encephalitis meningitis or brain abscess. Early in 1916 wounds of the lung and the abdominal wall were primarily closed with success by some surgeons.

The chief difficulty in carrying out primary closure of wounds of the extremities lay in the

large masses of devitalized muscle to be dealt with which became readily infected if not completely removed and always there was too the impossibility of excising large vessels and nerves lying in the contaminated depths of the wound without sacrificing the entire limb. Wounds with extensive fracture and comminution were difficult to excise and cleanse completely and often resulted in great shortening of the limb when so managed.

The year 1917 saw increasing adoption of primary suture in favorable cases. It was especially favored in joint and cranial injuries and uncomplicated wounds. With the entry of America into the war many of our army and Red Cross surgeons took up primary and delayed primary suture with great success but others unfortunately showed more enthusiasm than good judgment so that an S G O order had to be issued last summer (1918) against certain applications of primary suture. Our army surgeons are still divided in opinion over the relative value of the different methods of wound management.

In practicing primary excision and suture we can stop with the first operation or at any stage of the procedure and take up the successive steps later as opportunity presents. By thus permitting interruptions and postponements this method is particularly adapted to war work where evacuation of the wounded from station to station is repeatedly practiced from military necessity. The initial dressing can be placed at the first aid station primary excision practiced in the advanced operating station or even in a well equipped field hospital and the wound dressed. Closure can subsequently be completed at the base one two three or four days later or secondary suture be performed still later with or without Carrel treatment depending on the surgeon's preference and whether suppuration develops in the wound in the meantime.

TECHNIQUE

The steps of the technique as commonly performed are as follows:

1. Incision. This is usually made either parallel to the direction of the muscle fibers or to the direction of the large vessels and nerves or it may be differently placed so as to open up the track of the projectile widely or it may actually connect the wound of entrance with the wound of exit.

2. The track of the projectile is followed all diverticula opened and explored.

3. Foreign bodies clothing projectiles and loose fragments of bone or skin are removed to

gether with all tissues already dead or avascular and destined to necrosis. Important vessels and nerve must be saved otherwise primary amputation might as well be performed.

4 Hemostasis is completed with ligation of all visible bleeding point followed by gauze pack for a few minutes and then by fixation of the bacteria in the wound by tincture of iodine.

5 Repair of the structures is made by suture.

It is exceptional that one is not able to carry through the different step up to No. 4 inclusive at one time. If however because of the patient's poor general condition or other material circumstances of the moment excision of the damaged tissue is not completed one must effect their removal at a subsequent dressing to avoid spontaneous elimination by necrosis and consequent contamination of the wound.

When all steps of the operation except suturing have been completed bacteriologic examination by smear and culture is in order then if the clinical appearance of the wound indicates the advisability of its suture it is closed if not it is dressed and left to await the result of the bacteriologic examination and clinical development. If the wound is closed primarily the bacteriologic finding will indicate whether it should be opened on the evening day or may remain closed. Halstead's iron loop is used to close any war wound without bacteriologic examination so great is the danger from streptococcus infection.

The first and chief objective of the surgeon is to prevent infection of the wound. Excision removes the primary contamination and suture prevents secondary infection from the skin or dressing. The mechanical repair of the wound is a less important consideration.

NECESSARY CONDITIONS

Primary suture can be practiced only when proper surgical surroundings make aseptic condition possible. There must be an efficient and experienced surgical organization familiar with the procedures undertaken and accustomed to work together.

Operating room facilities must be such as to assure thoroughness. Lighting facilities should be so provided that the field of operation is extended the track of injury is clearly seen step by step and foreign bodies and dead tissues readily recognized and removed. An electric light strapped to the surgeon's forehead is a help. Sterile rubber gloves are indispensable and if available fresh pairs should be in reserve for needed changing. The surgeon's gloved hand should not come in contact with the wound if

possible. A strict Lister technique should be followed. Colonies of germs are starting to develop on the surface of the fresh wound and the uncontaminated portions of this surface must not become infected from them. Instruments which have been used once had better be set aside and re-sterilized and fresh ones made available although Vaughan considers this refinement not necessary and Lemaitre thinks that wiping off smooth instruments with sterile gauze is perhaps sufficient. No one denies that a plentiful supply of instruments and a well equipped operating room are desirable.

Assistants must be trained to the work. Their retractors and hands must not be used to spread contamination. Sponges must remove blood only by pressure on the wound and not by rubbing. The latter prevents contamination besides smearing and obliterating the track of the projectile which is desired to follow. They must know and carry on the Lister technique and be on the lookout for foreign bodies or necrotic tissue overlooked by the operator.

Facilities must be present for general anæsthesia. A trained anæsthetist will relieve the surgeon of distracting responsibility at a critical time. Local anæsthesia is sometime practicable and even desirable in superficial wound as recommended by Brock and others but once it tends to decrease the resistance to infection of tissues already contaminated it must be used with marked discretion. Halstead used local anæsthesia for most of his delayed and secondary closures. Spinal anæsthesia has also been used under war conditions when general anæsthesia was either not available or undesirable.

An accurate knowledge of the topographic anatomy of the region operated upon is essential. A surgical atlas at hand for reference is sometimes desirable. The surgeon must bear in mind the varying positions of muscles, nerves and arteries in various positions and movements of the limb. A straight path made by a projectile in a flexed limb will no longer be straight when the leg lies flat on the operating table but will penetrate the different muscles at different levels. The surgeon must also bear in mind the innervation and blood supply of the muscles and skin of the region for if in excising the wound he ever the blood or nerve supply to the distal parts further necrosis may occur and another excision or even amputation become necessary. Finally the surgeon must be so thoroughly impressed with the necessity of securing a clean wound by thorough removal of all contaminated tissues that he will have the courage to follow the procedure to completion.

We shall next consider in more detail the steps in primary excision and suture

EXAMINATION OF THE PATIENT BEFORE OPERATION

1 *Röntgenography* The use of the X ray either by plates or more usually the fluoroscope is desirable if not always absolutely essential for the successful removal of foreign bodies. The army localization of foreign bodies has reached a high degree of development and is practically always used in U S units when available. The experienced surgeon can follow up the track of the projectile quite successfully in many cases without fluoroscopic aid. But in cases where two projectiles enter through one opening or where the missile breaks up after entering the body and makes a Y shaped track the X ray is indispensable. Furthermore it often warns the surgeon in advance as to difficulties he will encounter in following the track at operation. In some cases it reveals the presence of a wound or fracture which clinical examination was not certain of or had missed entirely. In the case of simple penetrating wounds however where it is relatively easy for the surgeon to follow the track the X ray examination is sometimes omitted in French practice (though not in the U S service) to save time. This omission cannot be recommended in civilian practice.

In the case of multiple wounds such as hand grenades, buckshot, glass splinters and the like a special fluoroscopic operating table is necessary equipment if all foreign fragments are to be removed within a reasonable space of operating time. Unfortunately fluoroscopic tables are not available in many hospitals, army or otherwise.

2 *Clinical examination of the patient* One contra indication to primary suture and even to radical wound excision is an unfavorable general condition of the patient. It is useless to suture wound in patients so debilitated that primary healing is out of the question because of the general lowering of tissue vitality. The pulse must be examined as to rate and volume. It is a better guide to the patient's general condition than the temperature though the latter too has much prognostic value. Lemaître never sutures primarily a patient with a pulse above 100. Blood pressure is another valuable guide. A patient with a systolic pressure under 90 is a dubious case for excision and suture and a systolic pressure under 70 and diastolic under 55 indicates too much shock for immediate operation.

Patients should receive a general examination as to the presence of other wounds. These latter may usually be ignored if superficial but when

they have led to much hemorrhage pulse and blood pressure should be reasonably close to normal before operation. Hemoglobin estimation and white count are of less prognostic value and as a rule time is scarcely available for them.

A factor of great importance is the time elapsing between injury and operation. The Interallied Surgical Commission in its report states that primary suture should not be performed when more than eight hours have elapsed since the injury. This is not however a hard and fast rule because army surgeons not infrequently have successfully sutured wounds after twelve hours and in some cases even up to twenty four hours. The individual case requires judgment on the surgeon's part but there is no disputing the fact that the less the time elapsed the greater the prospect of primary healing.

EXAMINATION OF THE WOUND

1 Since infection is the surgeon's principal enemy his first thought will be to recognize its presence in the wound and its character. Some surgeons use smears, some cultures but clinical evidence is also important. The presence of gas in the tissues around the wound must be looked for with special care. It will be recognized by the crackling on palpation by tympany on finger percussion or by flapping the skin with nail percussion. The points which are painful to percussion in the neighborhood of the wound must be examined most closely for evidence of gas. The fluoroscope or X ray plates may reveal gas in the tissues. It may show very distinctly in the plates infiltrating along the muscle planes and underneath the skin. Once seen in the X ray it can also be shown clinically. Such wounds must not be sutured primarily but after primary excision and special care to remove all dead muscle they must be left wide open with a light gauze dressing and in favorable cases may subsequently permit of secondary suture.

2 Nerve and vessel lesions must be looked for. Motor or sensory paralysis must be noted if present since it helps indicate the course of the projectile and warns the surgeon in advance of certain repairs to be made. Injury to or division of main nerve trunks occasionally is a contra indication to primary suture particularly in the case of wounds lying below the level of the division.

Vascular lesions are easily overlooked if hemorrhage has already stopped. It is important to recognize them because flaps with a poor vascular supply are not proper subjects for primary suture and subsequent hematoma formation would en-

danger clean healing Where there exist two or more wounds in an extremity with the main blood supply cut in the proximal wound the distal wound should certainly not be primarily sutured

3 *Hæmatoma found in the fat fascia or muscle* should be accurately excised since they form a fertile field for necrosis and sloughing Gas gangrene the greatest peril in primary suture of war wounds has a marked predilection for a necrotic or poorly nourished muscle When the hæmatoma infiltrate a large part of the wound or of the limb so that excision is difficult or incomplete suture should not be attempted The hæmatoma is split widely all clot are removed or clipped away with all blood soaked tissue that can be spared and the wound dried with gauze avoiding any compression

4 Many extensive injuries of the extremity it will be self evident to the surgeon are unsuitable for primary suture Particularly in the case with fracture and bone injury where closure and excision of the wound is difficult It is usually better for the average surgeon to practice delayed primary suture in most compound fracture cases and not to attempt primary suture until thoroughly familiar and successful with the management by delayed primary closure Halstead is strongly opposed to the primary suture of compound fracture Blake also sound a warning note to the inexperienced to try delayed primary suture rather than immediate closure

5 In multiple injuries the initial problem is diagnostic rather than operative Will the patient's general condition and vitality see him safely over the operation and carry him through to a subsequent recovery? This is often a difficult question to decide and call for great experience and common sense

THE OPERATION

1 *Preparation* Blake recommends dry lavage of the part clean with the skin with ether followed by a 3 to 5 per cent solution of iodine and alcohol The use of a rubber constrictor will depend upon the nature and location of the wound and the condition of the limb It must be recalled that prolonged constriction tends to favor the development of gas gangrene and anaerobic infection

The anæsthetic as a rule is ether Gas oxygen will not doubt be used to a considerable extent in civilian hospitals In small and superficial wounds novocaine local anæsthesia may be used as recommended by Brock but for larger wound it prob-

ably increases the danger of infection and saves no time

2 *Incision* Before cutting down on the track of the projectile the limb should be put when practicable in approximately the position it was in at the time the wound was received in order that the perforations through the various tissues and muscles may be as continuous and contiguous as possible The edges of the skin wound are excised together with the subcutaneous connective tissue fat and fascia down to the muscle As a rule not more than 1 cm. of skin need be removed on a side One must bear in mind that the skin edges must ultimately come to ether and in order to accomplish this end successfully economy of tissue removal is a necessary virtue

The path of the projectile must be followed through the muscles and intermuscular spaces Muscle as well as fat and fascia must be excised wherever dead or soiled The incision in the skin will be extended in whichever direction necessary to allow of free access to the path of injury In performing the excision from the skin down through the muscle the surgeon must bear in mind that he is operating in an infected area and that his instruments may carry germs from the infected surface of the wound to the freshly cut clean surface Consequently the safest practice is to disinfect every soiled instrument as recommended by Moynihan making each fresh incision into clean territory with a clean blade and using a strict Lane technique handling the wound surface and edges only with instruments and not with the gloved finger

This strict technique demands an ample armamentarium Most army surgeons have had to be satisfied with a less strict technique Lemaitre recommends changing instruments frequently but states that he is often satisfied merely to wipe off smooth instruments with sterile gauze Ashmun at the other extreme does not re-sterilize his instruments or hands during the same case or advise doing so Halstead says that in times of great pressure of work during the drives last year he and other surgeons under his command have gone from fresh case to case simply rinsing their gloved hand in water and bichloride and reboiling instruments from time to time and yet secured about a high percentage of primary healing under more leisurely conditions Surgical judgment experience and speed avoid mauling of the tissues are no doubt great factors for success in this kind of work

All muscle which does not bleed or which has lost its normal color or which does not react by fibrillary twitchings when pinched with a forceps

should be excised. Every part of the wall should bleed, says Moynihan, when excision is complete. Small bleeders revealed in the process of excision should be ligated, and the absolute prevention of subsequent hæmatoma formation by careful hæmostasis is very essential to the prevention of infection. Foreign bodies and fragments of clothing should be looked for and removed. It must be remembered that the neighborhood of the wound of entrance and the outer portion of the track through the fat, fascia and muscle is the region where foreign bodies and contamination are most frequently located.

In cleaning away soiled or necrotic tissues, some surgeons prefer curved scissors and others the scalpel. The main thing, however, is the excision rather than the tool used. All dubious tissue must be removed, the track and its diverticula laid bare and the penetrating wound either transformed into a gutter wound if superficial or completed through and through, sufficiently enlarging it to inspect every corner and boundary and to stop all the bleeding.

Penetrating wounds may also be attacked from both ends, first from the side of entrance and then from the side of exit, as engineers build a tunnel. Such a method may help the surgeon to stick to the track of the missile or regain it when lost. Following the track is sometimes simple, but not always so. It is easy to lose one's way and produce artefacts resembling the track. Little blood clots along the pathway, adherent fragments of clothing or simple ecchymotic spots in the muscle may help to pick up the course when lost. Sometimes shifting the position of two adjacent muscles will cause a broken path to become continuous and when the path is completely lost on one side it may be taken up again from the opposite side or even from a fresh incision. In some instances the use of a coloring agent may help to follow the track. Le Grand uses 5 per cent methylene blue in 20 per cent formol. Wilson Hay and Moynihan use brilliant green. Acriflavine is another popular dye, with the French. Cross, Carrel, Blake and most American surgeons do not favor dyes.

In oblique wounds one may sometimes best follow up the track by a series of ladder incisions instead of a single long incision. When the limit of one incision is reached a gauze strip is introduced into the path and this gauze cut down on by another incision at higher level.

When the whole track is opened up and excised it may be wiped out with a sterile piece of gauze pulled through by a forceps. Such a strip of gauze occasionally may catch foreign bodies or

clots or tissue fragments not otherwise located. Against such a rubbing procedure is the fact that it tends to disseminate any germs still present on the wound surface along its track. It is sometimes a satisfaction to remember in deep wounds difficult of access that the contamination present is likely to be less the deeper one proceeds along the track.

3. *Inspection of the track and excision.* When the wound track has been followed through completely, it is re-inspected for foreign bodies and bone splinters and these removed if found. The nerve, vessel and bone lesions are next subject to inspection.

Nerve injuries when found will be immediately treated. Complete division will be repaired by suture and partial division by a stitch bringing together the neurilemma. Nerves should not be excised in excising the wound. Occasionally a small hæmatoma in one nerve end may be trimmed off when no undue shortening is thus caused and a complete crushed nerve of course cannot be saved. The unnecessary sacrifice of nerve continuity as well as the unnecessary excision of clean penetrating wounds were two of the serious errors most commonly made by civilian surgeons when starting in to treat war wounds. Some surgeons enclose the repaired nerve in muscle or fascia or other protective tissue, while some like Lemaître do not do so unless there is a special indication such as the proximity of a fracture.

In the majority of cases of arterial injury double ligation of the vessel will be necessary. The proximal stump may have a second ligature about one centimeter above the first when possible, as long ago recommended by Nicholas Senn. It is seldom that the injured vessel can be sutured except in the case of small lateral wounds in a vessel lying in clean healthy tissue. Secondary hæmorrhage, hæmatomata and aneurism formation are the penalties of a failure of judgment in this direction. In case arterial lesions are uncovered in following down the wound track, a tourniquet should be at hand to stop a hæmorrhage impossible to catch immediately with an artery forceps. If the arterial injury is recognized before operation it may be possible to begin the operation by cutting directly down upon the artery and tying it through this fresh incision, which is then sutured primarily. In the case of a large venous trunk the problem is simpler since if the bleeder is not caught at once the hæmorrhage can be stopped by compression.

It is necessary to remove all bone splinters met. In an incomplete fracture the bone wound may

simply be freshened with a rongeur forceps. In removing splinters the periosteum and cortical osteogenic layer are preserved and emphasized by Leriche and Blake. The latter recommend highly Ollier's periosteum cutter for this purpose. The bone marrow is injected and its superficial surface removed if soiled or hemorrhagic.

Joint lesions may be treated by exploration and cleansing or by arthroscopic excision in certain cases by expectant treatment but should not be drained through and through. The treatment of joint lesions is a chapter in itself and cannot be gone into here in detail.

In incisions the outer portion of the wound track the deep fascia and peculiar attention. Generally it is simply perforated but sometimes a firm ed with brackets is retained. The excised muscle is excised and then the portion is examined with particular attention to the wound here that one fifth of a minute fragment of clothing adhering to the tissue and depriving the way for infection. Intramuscular fixation needs the same attention and if a few adjoining muscle fibers are removed the danger of leaving behind adherent bread of clothing will be lessened. The dense fascias are turned and in place of the above and below.

Tendon in the path of the projectile must likewise be minutely inspected and if cututured after free healing of the end. If the muscle is destroyed for reunion to be possible the stump may be sutured to a neighboring tendon. Catgut suture is likely to make less trouble subsequently in this work than unabsorbable suture. When tendons are merely grazed and oiled but not cut they must be cleaned minutely with a sterile or even dissected away from the oiled or oiled surrounding tissues.

When the subcutaneous or intramuscular spaces are infiltrated with dark blood or with blood which has been transformed into a pinkish or greenish gelatinous mass complete excision should be performed. This clot change is often a prelude to severe inflammation and denotes the danger if not the actual existence of a leucemic gangrene.

The muscles themselves may be extensively destroyed by the explosive action of a high speed bullet. Muscle necrosis may be widespread throughout an entire muscle belly or a small group of muscles. This destruction of muscle is an exceedingly grave injury since complete excision is necessary and the condition difficult often of recognition and still more difficult of attainment. Dead muscle is one of the best culture media for the gas bacillus and when it is low and is in-

fecting with pyogenic organisms it is apt to transmit the suppuration at an early date far up into the interior of the limb. K. Taylor considers from the experimental evidence that dead muscle is more dangerous in a wound than cloth. The extent of muscle excision necessary needs sound judgment and experience for its determination. The beginner is apt to remove either too much or too little and serious results will be the consequence of an error in either direction. If in doubt primary amputation should not be performed. There are some cases when almost no muscle excision is necessary there are others where it is necessary in only a part of the track while in other cases the whole muscle or muscle group must be removed entirely.

Normal contraction of the muscle is led in when cut and fibrillary contraction when pinched with forceps are three valuable signs to indicate a living muscle. It should be remembered that fibrillation on pinching will not be present in a muscle deprived of its nerve supply. Traumatization on the surface of the muscle should be avoided for such a traumatized surface may not react to pinching while the intact muscle a little higher up will. A muscle track which presents a normal color needs careful inspection but only a little clipping. When the track is black or grayish the entire discolored surface of the track must be removed. The excised tissue is sometimes a little more sometimes a little less than a half centimeter in width on the average. If there is gross present more tissue must be removed.

Muscles which are pale and anemic from compression will bleed little if any save from an occasional artery and which show only slight fibrillary contraction on pinching may recover if the primary amputation cut and the swollen muscle allowed freely to expand. If after such decompression however the muscle does not promptly regain its vitality it must be excised progressively until a healthier area is reached. A muscle darkened with hemorrhagic infiltration must be excised.

It is better to cut muscle longitudinally than transversely. Unless transversely cut muscle bellies are approximated they cannot regain function. A muscle divided longitudinally will retain its function at least in part and regain more later by hypertrophy. Transverse excision destroys both blood and nerve supply to the distal portion of the muscle whereas longitudinal incision may preserve both. A muscle stump deprived of either nerve or blood supply cannot be expected to vigorously resist infection. Simple

perforating wounds of the calf muscles for instance frequently heal kindly but when the track is incised widely and transverse division of the oleus performed very grave results may follow owing to the consequent loss of blood and nerve supply. Unless a muscle receives its nerve and blood supply from two or more sources it is usually better to work around it in following up the path of a projectile than to cut it transversely.

4 *Hæmostasis and iodine fixation* Primary suture will not be a success if a hæmatoma is allowed to form. Hæmostasis therefore must be minute every little bleeder being caught and tied and the whole surface dried by gauze pressure before applying tincture of iodine (3 to 5 per cent). When the iodine fixation is properly done the whole wound surface becomes as dry as if varnished and assumes a characteristic copper color.

Tincture of iodine fixes not only the bacteria but also the superficial tissue cell. As a result a slight secretion of turbid serum takes place in the first few days and oozes out between the stitches of the wound or along the capillary drainage. This slight discharge is no drawback if it is properly taken up by dressings though it delays cicatrization a few days and makes advisable a little later removal of the stitches than in the average clean surgical incision. If primary suture is not performed the fixative use of iodine improves the early prospects of a delayed primary suture. A number of substitutes have been proposed and used for iodine when followed by delayed primary suture among the better known being Havcraft's soap solution, Morrison's bipp, chloramine T paste, acrilavine paste and eusol as well as Dakin's solution and Wright's salt pack.

5 *Suturing* The varieties of suture have already been mentioned by name. We will here recapitulate them.

Primary suture is the immediate suture of the wound following excision and fixation as has just been described.

Delayed primary suture is the closure of the wound from one to four days after the excision without tissue reexcision of any kind. The anatomic layers of the wound may be brought together separately or all together or the skin alone may be sutured according to the need of the individual case.

Secondary suture is closure of the granulating wound at a still later date following either complete excision of the scar tissue or removal of only the epithelial border and adjacent skin. Some under cutting of the skin on one or both

sides is apt to be necessary to complete approximation. Just as with delayed primary suture the layers of the wound may be reunited separately or *en masse* after excising the scar or simply the skin may be sutured. Affoltz and Carrel instead of sutures use agglutinative strips which draw the skin edges together gradually. Morison uses a corsetage of calico strips glued on the skin. Moynihan recommends tetra cloths which also overlap skin edges and tend to prevent secondary infection.

When it is deemed not advisable to suture primarily the aim next is toward the possibility of delayed primary suture while observing the patient closely clinically and bacteriologically. When there is sufficient wound disturbance to make delayed primary suture inadvisable the next aim is to perform secondary suture as soon as the granulating wound becomes practically sterile and entirely free from streptococci.

When primary suture cannot be done the treatment of the wound consists in applying a simple dry aseptic dressing without the use of any antiseptic other than tincture of iodine. This dressing must be renewed every few days. Carrel however in such cases recommends Dakin's solution or the more stable chloramine T. At each dressing any necrotic fragments seen are removed with the scissors. The skin is washed off with alcohol or ether and then painted with a little tincture of iodine or smeared with vaseline. Lemaître washes off the skin with sodium oleate. Wounds treated in this way depend primarily on the tissue vitality of the patient for disinfection. Antiseptics are merely an aid. Some army surgeons claim to see very little difference between results with antiseptics with normal salt solution or with a dry gauze dressing.

The bacteriologic condition of the wound must be determined from day to day by smears or cultures in order to ascertain the earliest possible date for secondary suture. The absence of the streptococcus is the most important bacteriologic fact to be determined before suturing. A wound freely showing pus does not need to be cultured but when the wound surface is relatively clean daily smears or cultures will tell best the correct time for closure just as when the Carrel treatment is used.

In suturing the deep layers of the wound are best united with rather fine catgut thus aiming to leave in as small a foreign body as possible. A capillary drain consisting of strand of silkworm gut or a small strip of gutta serena may be inserted at the lower angle of the wound and removed between the second and fourth days and

it inserted ends examined by smear or culture. This tell tale gives additional information as to the bacteriologic condition of the closed wound. If streptococci are found in this secretion the wound had better be re-opened at once before any spread of the infection starts in. Suture is completed by applying a sterile dry dressing and immobilizing the operative region as far as possible.

POSTOPERATIVE CARE OF THE PATIENT

If the operation be properly done after care should be simple. If the initial surface smear and the smears from the tell tale are negative for bacteria especially cocci the dressing need not be changed until the stitches are removed at the end of ten or twelve days. After the stitches are removed a fresh dressing should be re-applied for a few days but this need not be renewed on the wound is completely healed.

There are three symptoms which are dangerous signals during the postoperative period: fever, tachycardia and pain. Of these pain is perhaps the most important. In general the patient suffers not much from pain when twelve hours have elapsed after the operation provided of course the wounded member is not moved or pressed on. Pain when present may be due to too tight a dressing or to beginning hematoma formation which means that the stitches must be removed, the wound re-opened, and the bleeder hunted for. Pain may also be due to beginning infection or merely to the nervousness of a hypernesthetic and perturbed patient.

As for fever there is often a slight rise during the first two or three days ranging from 100 to 102. Then the temperature falls rapidly to normal if the cause is pursuing an uneventful course. Even a slight temperature of 103 should not be considered alarming. It is a prolonged rise in temperature which indicates the possibility of a wound complication and calls for re-examination of the wound. If on inspecting the wound a little redness is found over one of the stitches gently pressure may be applied. If this pressure elicits noticeable tenderness the stitch should be removed. If there is no pain the stitch may remain in place.

The pulse should normally run between 70 and 80. If it rises much above this rate even without a rise in temperature the wound must be inspected daily if the pulse rate keeps up distinctly above normal. As a rule the rate rapidly drops again to normal in the favorable case. If however pulse temperature and general condition are all abnormal the surgeon can expect trouble and prepare by re-opening the wound.

CONTRA INDICATIONS FOR SUTURE

When to and when not to perform primary or delayed primary or secondary suture is a matter for the exercise of the greatest judgment. It is the crux of this whole question. So far as indications for primary suture go one can say briefly that all or almost all war wounds which can be so treated in due time should be. It is the contra indications which it is more important to consider. Some of the contra indications have no relation to the patient or the wound or the surgeon and so scarcely apply to civilian practice. But in army or air force primary suture cannot be practiced when the influx of wounded is out of all proportion to the operative capacity of the unit or when sterile supplies or anesthesia or various other essential parts of the needed apparatus or material are not to be had. When fuel or light or water are not available it may happen over short periods of operation can be performed. Of the contra indication which may apply to civilian practice we shall consider first the absolute and second the relative.

(1) Absolute contra indications (a) when the patient reaches the surgeon too late after the injury with the wound already suppurating or with streak or a zone of lymphangitis around the wound with swelling or tenderness of the regional lymph gland (b) when the patient arrives (even though it be after only a few hours) with the evidence of beginning gangrene already unmistakable (c) when the patient's general condition is bad: pulse above 120, systolic blood pressure below 70 or diastolic below 55, patients who come into the hospital in shock or acutely anemic may be given salt infusion and stimulants and in a few hours be brought up to a condition which permits operation (d) a badly shattered limb or severe injuries to the soft parts which have destroyed the main vascular or nerve supply may make primary amputation preferable. A wound lying distal to a wound in which the structure of a main artery is practiced must not be sutured primarily. The absolute contra indications can be summed up really in two: advanced infection or impaired circulation.

Relative contra indications (a) time elapsed since the injury. The report of the Interallied Surgical Commission in 1917 makes eight hours the maximum time limit during which primary suture is permissible. This limit however is not considered absolute by army surgeons. Moynihan says eight to ten hours. Blake eight hours and Lemaitre has been able to suture an occasional case even up to twenty-four hours. A great deal of judgment must be used in the

individual case depending upon the nature of the wound the amount of contamination and the bacteriologic findings (b) Temperature before operation Lemaitre advises against suturing any patient with a temperature above 38 C (100.6 F) Such patients must be followed with special care and the wound reopened if temperature persists or other unfavorable symptoms appear (c) The finding of a painful tympanic zone around the wound before the operation or of a gelatinous or pinkish or greenish connective tissue at the time of operation warns the surgeon to pause and consider before suturing Prudence and conservatism are better in such a case than overzealousness to secure a speedy and brilliant result (d) When the wound is infiltrated with blood and clots it had better not be sutured unless every bit of the hematoma has been excised This is particularly true when the rupture of a large vessel requiring ligation is the source of the hematoma (e) The presence of extensive necrosis due to explosion beginning gangrene or large quantities of clothing contra indicate primary suture though delayed primary suture may subsequently be successful (f) A grayish appearance to all or most of the wound track indicates that suture had better be postponed until the wound cleans up (g) When the wound is peppered with a multitude of small fragments as in a hand grenade explosion or buck shot wound or the like In such cases the general vitality of the whole region is apt to be markedly diminished and therefore the reaction of the wound should first be studied before attempting to close it (h) When the whole wound track has not been seen either because difficult of access or because the path could not be followed at operation it is better to delay suture than to risk a deep muscle phlegmon which may make considerable headway before discovered (i) If there is any doubt about the asepsis of the instruments or material used or if there has been any surgical slip in asepsis it is better to leave the wound open and wait events (j) When the surgeon is in doubt of himself while he is new at the method if the case appears in any way unfavorable and the surgeon is not certain in his mind whether to suture or not suture it is better to delay closure and wait development This is a very important contra indication Delayed suture sacrifices chiefly time ill advised primary suture sacrifices both limb and life One should not be too ambitious at the start and after finding his secondary sutures and the delayed primary sutures progressing nicely he may then pass on to the primary suture first in the simpler and

then in the more difficult cases Bacteriologic examination should not be omitted and if streptococci are found suture should not be done

ROLL OF THE LABORATORY

The laboratory is of first importance It is indispensable for primary suture as well as for delayed primary and secondary suture Since Tissier showed the value of the bacteriologic study of wounds and the significance of the role played by the streptococcus nearly all surgeons have come to recognize the laboratory's importance The bacteriologic examination gives us the key to certain failures which previously could not be understood After the streptococcus the staphylococcus is the most noxious organism and the other bacteria of relatively less importance Lemaitre thinks that occasionally a wound with streptococci in it may heal but the experience of most surgeons is to the contrary A little longer waiting and delayed suture will give about as good a result Impatience may lead to a fatality

CONCLUSIONS

A technique is taught by example and not by words It is learned from cases and not from lectures Surgeons with extensive experience at the front still differ in their methods of wound treatment and yet the results with the Carrel method with the method of primary or delayed primary suture or the Wright or other antiseptic methods do not differ so greatly as do the results obtained by different surgeons of unequal experience using the same method

Primary suture is a distinct and valuable addition to our technique of wound treatment Its use appears to be on the increase It has its overenthusiastic and overzealous advocates as does the Carrel treatment and other methods but it is a procedure even better suited to civilian treatment of wounds than to army treatment Its opponents claim that it necessitates the excision of considerable tissue at least more tissue than would be lost by chemical disinfection but on the other hand Carrel performs and recommends excision in all his cases except those which enter the hospital actually suppurating There are no doubt surgeons who excise too much Some others excise too little Clean perforating wounds which would likely have healed primarily under a simple occlusive dressing no doubt have been excised when they should have been let alone Primary and delayed primary suture are only varieties of wound treatment They are not a substitute for all other methods But when used with care and discretion in proper

surroundings and with proper laboratory aid by surgeon of mature experience and judgment they constitute an important and welcome addition to our surgical resources

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Warbasse J P The Postoperative Treatment of Abdominal Cases *Am J Surg* 1918 LVIII 289

The ordinary uncomplicated operation brings the patient back to bed in good condition. The patient should be taken to a quiet room and kept in a supine position until the anæsthetic depression has worn off. As soon as the nausea has worn off fluid may be given and the head elevated. On the second day milk may be given and then the diet steadily increased. The patient may be allowed in a chair on the eighth or tenth day and at the end of twenty one days may be permitted about his business.

Special measures may be employed. The placing of a rectal tube permits the escape of gas. Sand bags placed on the abdomen to increase intra abdominal pressure and in expelling gas and are especially indicated when large abdominal tumors have been removed.

Patients are better off without morphine but it may be given for the first two days in doses of 1/2 grains every three hours when pain, restlessness and sleeplessness are present. If left alone the bowels will move by the fourth day and no harm results but to move the bowels a dose of paraffin oil or 1 ounce of castor oil and 1 dram of compound tincture of cardamon may be given. Limes of vinegar relieve ether nausea.

Complications may require care. Vomiting may be relieved by elevation of the head keeping the stomach quiet gastric lavage enema and relief of intra abdominal pressure as from drain collection of pus or spreading peritonitis. Meteorism may be relieved by elevation of the upper part of the trunk sips of hot water hot stupes to the abdomen enema containing turpentine magnesium sulphate and glycerine or milk and molasses. Acute dilatation of the stomach requires immediate washing of the stomach. For pain morphine may be given but not repeatedly. For shock proctolysis of glucose or saline solution is indicated. Other methods for combating shock are filling the abdominal cavity with normal saline before closing and also filling the large bowel with normal saline. For thirst fluids by mouth under the skin or per rectum are indicated. Retention of urine is frequently relieved by a warm enema warm water to the pubic region and as a last resort catheterization. Acidosis should be combatted by sodium bicarbonate. Other indications for treatment are postoperative hemorrhage ileus peritonitis phlebitis and pneumonia.

The time for permitting a case to get up and for postoperative feeding depends upon the nature of the case. I I Brikow

ASEPTIC AND ANTISEPTIC SURGERY

Grife G W Treatment of 420 Infected Wounds Under Battle Conditions Arriving on the Average of Fifty Eight and One Third Hours After Injury Without Previous Surgical Treatment *Canad M Ass J* 1918 LV 961

These cases came to the operating table for first treatment varying from 24 to 150 hours after injury. All the wounds presented heat swelling tenderness redness and a discharge of purulent fluid. All operative cases were prepared under anæsthesia by (a) scrubbing thoroughly a wide field with soap and water (b) shaving (c) 5 per cent sodium carbonate (d) ether (e) alcohol.

Every wound that had not undergone abscess formation or new tissue formation was treated by complete surgical revision. Devitalized tissue was treated in an opportunist manner. Little skin was excised. Ample exposure by vertical incisions was made. To guard against the complications of the days following fascia overlying swollen muscle was incised and skin and fascia incised where swelling and tenderness might develop.

Five plans of treatment suitable to rush periods were tried: (1) surgery plus dry gauze dressing no antiseptics (2) saline (3) dichloramin T chloroform (4) Wright's hypertonic pack (5) alcohol.

Of 420 operative cases 44 were immediately sutured all proving successful. Of the 6 marked for delayed suture 91 per cent healed without requiring the removal of any sutures 61 per cent were partial successes and 29 per cent were failures. There were 4 deaths or 0.9 per cent mortality. There were no cases of bacteremia or septicemia. I I Brikow

Dunlop J The Carrel-Dakin Treatment at Oxford an Observation of the Carrel-Dakin Method of Treating Chronic Wounds in an Orthopedic Center in England *Br J Orthop Surg* 1918 VI 495

This report is confined to cases of chronic wound suppuration of several months duration which had been subjected to many of the treatments in vogue such as bipp, saline etc. In each instance the process of repair and healing had come to a standstill or infection had lighted up and it was a question of saving life. Practically all cases confined to

lel consti ted of such typ s as comp n l fra tures of the uppe anl k e r m tl gh anl l s fe were simple flesh ound and me ere b s ft hcl had become eptic eeks fter r l All e ery cl nic in chr tter o cut exic b t n l d sc r t s ue

All c ses ere thor ughly op ned up l l c l v h l still under the sthetic O t ng t b l the apparatu i mply m t l l l Duly l ssing a e begun t rtug the l y t t nd all d ssings ar d cl v the urc l l l ated upon the e The teln ju i r c l l l c r r el out The k l at the n l l l l t l lcoh l t l e v u l p g l ut n l D kin sol tion and tub then f t n pl c l l p r ane of the un l mu h t r a l l h oun l s tated by the C r l D k n m th l W th in a day o t o th y sh s v l l l g y t k pr b bly du to gult l all un u m t t W th n afe l v t t r t b n r l m p t co tnuing ntl the e tr urf m th m th brillant red s cha ct r t lly l r t lly c el The d charge at h t m lly t l l l u t gr d uall becomes t l k and t n a s a l l l l l app r a r m al gr nulat g a rem a g l l nd ton f h l ne s n t s e l e l l y c r l t e th n h r l hell f b b g dually l f t n g lu ng the proce f t l l t a t n

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Ren J A The Value f the C rrel Metd od Appl ed to Supp r t g Wound and r R e l l p t al (S l l l d l m th d C l l l p l u) L b l e p p r t d m n h p t l d l l f g 98 46

The uthor as in ch rge f an u u l l v a h p t l and for the p s t t o year l s n s t t d th C r el Dak n meth d n th t r e a t m t f appu tng wounds havi g stud ed the meth l C r l hospital at Compugne H r e p o t b e d up n the t r e a t m t f about ound

The C rrel methd has g v n g o d r e s l t s n e t e n v e sup e r c i l wound In fracture the r u l t s dff r e d a c c o d g to t l l o n e s v o l e l They v e g o d f t l e h u m r u r f a s g l e b o n e f t l

f r e a r m s l o e r f o r b h t h b o n e o f t h e f o r e r m o r l e C o m p l e t s t r l z a t i o n v a s n e v e r o b t a i n e d i n f r a c t u r f t l e f e m u r T h e m e t h d f a i l e d i n t e t i s a n l o s t e o y e l t u a n d u l s e q u e n t f s t u l z i n a r t u l r f r a c t u h e t h e i r r a t i o n d i d n o t o v i a t e r e t i n l o i n p u r l e n t p l u s y

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Melt e S J The Application f a Con entrat d Solu t i o n o f M g n e s i u m S u l p h a t e t o S c a l d s and B a n s J l l m c l l E p T l e r p 198

The p m e n t s t o t e t t l e a c t i o n o f c o n c e n t r a t e d l t f g n e s i u m s u l p h a t e v e r e m a d e o n n o n j u l l n n h a v e l r b b i t s e r r B l e s r e s u b m e r g e l i n h o t w a t e r t h e n o n c a l t l y s u b m e r g e d i n 25 p e r c e n t m a g n e s i u m s u l p h a t e a d t h e o t h e r n a s o l u t i o n o f l v l l l e n d k e p t f r t o o r t h r e e h u r s I h r u b m r g e d m a g n e s i u m s u l p h a t e v a s p r e p a r e d i n m u l l l t h e r i n t h e s o l u m h l r l l t n h e l i n f l a m m a t o y r e a c t s

The u t t r c c l u d e s t h a t m a g e s i u m s u l p h a t e g a l r e u l t s h e n u c l e a r l y i n s c a l l s o r l u n I E B s n o v

T f f T a n d D m a r r R T h P o g r f C i t a t i o n o f W o u n d and t h A g e n t s C o p l l o f I n f l e n c i n g I t (S l m h l l t t l l l l l l l l l g t l t s t t l l l t l l l J d f P a 98

I l r t h l a n k e r o u r e d t o f n d i n w h a t l k p l v l o r c h n e a l r a n t s c o u l d i n f l u e n c e t h g r f e a t u r i o n t e r l e d o n d l l t t l y l l o n t h e k o n c e l t i o n o f n n l c a t r t n l l h h a s a l r e a d y b e e i n t g t l a t t h R k f e l l e r I n s t i t u t e a t C o m p i e g n e F n u l l t h e d e t o n f C a r r l I t w a s k n o n t a t a p t l l t l o u d o u l t c t r i z e n a h v t t h h h l l b e d e t m e d f r o m a m t h e m t l f o r m u l A t h o e t c c u r y o f a t r n t u l t b t a c e l o t t t i v s p o i b l e t p r h i t l l u t a t w h i c h c o m p l e c a t r a t i o n u l l e f t l

The u t l r b l e t o v r i f y t h s p e r i c l o u l t r e t d r d i n t h a t t h e C r e l Dak n m t h o l e t h y f o l l l t h t h e r t c e v e I n l e e p o n d t h e y f o u n d t h a t c i r t r a t o a s q u i c k d s t e n e e n m o r e r a p i d t h n n u p e r f a i l o u n l f t h e m e c r o t o u r A p a d o v i c a l f t o b l f r o m h i c h n o g n e r a l o c l u n i d r a n a t h a t t h e p r o r e s s i v u n o n o b t a n l b y m e a n f a n e l a t e c o r e t m y b s u p e r i o r t h e p a t l a i o n o b t e l b y s u t u r i n g

The authors study has suggested that the blood brings to the area of the wound those chemical substances necessary for retraction of the wound and for epithelial proliferation. When the biologic process is not disturbed by infection etc. it is regular and the complete time necessary for cicatrization can be predicted. The existence of physical and chemical activating agents have been demonstrated to the author by certain clinical facts. In the case of some skin graft experiments the grafts were completely absorbed but the authors think they had brought to the wound certain substances activating cicatrization.

Further results noted by the authors were that a simple dry absorbent dressing on a sterile wound brings about cicatrization a little more rapidly than the Dakin method that the use of chemical bactericidal compositions advance the time of cicatrization only lightly while halotherephary associated with the Dakin treatment shows a considerable gain in the time required for cicatrization.

The authors article is illustrated by a large number of cicatrization curve. W. A. BRENNAN

ANÆSTHETICS

Richardson F. L. Heart Lesions in Anæsthesia. *Med Press* 1918 c 1 44

The author states that while patients with heart lesions undoubtedly offer greater risks from anæsthesia than healthy individuals yet if they are in condition to stand the operative procedure the administration of the anæsthetic need not be prohibitively dangerous to life. More of these cases have died from the effect of the operation itself or from poorly given anæsthesia than as the result of the anæsthetic itself. Valvular heart lesions perfectly compensated and with a reasonable margin of safety have offered very little danger from the anæsthesia. The nearer the overstepping of the line of compensation the more the danger from anæsthesia. Provided the heart lesion does not interfere with the ordinary affairs of life it will not interfere with the taking of an anæsthetic. Chronic valvular disease not as dangerous as are endocardial and myocardial degenerations. Angina pectoris is perhaps the most dangerous.

In the presence of serious disease of the heart the one fundamental principle should be the maintenance of blood pressure as near the level which is normal for that individual as possible. This principle should be kept in mind in the preoperative treatment, the operative procedure, the selection and administration of the anæsthetic and in the postoperative care. When possible patients should be put to bed for a number of days before the operation in approximately the position they will have to assume after the operation in order to observe the heart action under these conditions.

The author lays great stress on the importance of the diastolic blood pressure as an indication of the condition of the heart muscle to withstand operative

procedure. For serious operations fats are reduced and carbohydrates increased. Ten to twenty grains of sodium bicarbonate are given two hours before operation. Cathartics should never be given unless the patient is in the habit of taking them.

Immediately before the induction of anæsthesia every precaution should be taken to allay the natural fear and uneasiness incident to operative procedures. Morphine and atropine as preliminary medication should be given sufficiently early to allow of their maximum action before the anæsthetic is started. The position on the operating table should be comfortable. If it is incompatible with the performance of the operation itself the position should be gradually changed after the induction of anæsthesia. Any sudden change may cause serious interference with breathing or heart action.

The author proceeds to a discussion of the relative merits of method of anæsthesia and anæsthetic drugs. Local anæsthesia if it enables the operation to be done without pain offers the least danger to the patient. Fear or pain are factors which may tend to raise blood pressure as much as ether or nitrous oxide. Spinal anæsthesia should never be given when compensation is broken or when the margin of safety is narrow. Patients with arteriosclerosis stand spinal anæsthesia quite well. Scopolamine is a drug too depressant and too uncertain in its action to be used as a pre anæsthetic in cases with serious heart lesion.

The author considers gas oxygen far from safe in cases of broken compensation or angina pectoris. Short operations requiring no muscular relaxation may be done with less disturbance to the patient under gas oxygen than under any other form of anæsthesia. It must be remembered that great changes in the condition of the patient may occur with alarming rapidity and without warning. In the author's hands almost as many patients vomit after prolonged gas oxygen anæsthesia as after ether but the duration and severity of the vomiting are less.

Ether may be so given that it will have little effect upon the damaged heart during the course of the operation. Unfortunately its administration is followed by a period of depression which the damaged heart will not survive.

Chloroform while not unpleasant to take and quicker in action than ether lowers the blood pressure. The highest percentage of fatalities in patients with heart lesions occurs during the induction period when without warning the heart action stops. Almost of equal danger is the period of from three to five days after the operation when the toxic action of the chloroform on liver, adrenals and heart muscle manifests itself. Theoretically one should be able to combine chloroform with ether. The various mixtures have been tried and found wanting. The author believes that in some cases the addition of a little chloroform to the mask is very useful when inducing anæsthesia with ether but the mixture should be made on the mask as indicated and not according to any preconceived formula.

incision is made in the upper nose region and the ridge skin then cut medially down to the tip the skin is then pulled down to cover defects. This may if necessary be supplemented by a strip cut from the cheek which is reversed its outer surface thus forming the inner surface of a defect in the nostril without retraction.

Defects about the point of the nose are the most difficult to correct. They are usually accompanied by lesions of the septum. Guetz says that such a defect may be remedied by cutting a kind of triangular flap out of the remaining septum the base of this being left adherent to the floor of the nasal fossa for about 2 cm. This triangular piece is easily pivoted about its base so that its posterior angle becomes superior. The alar are mobilized about it.

The method shown by a number of illustrations. In its new position the triangular flap takes the place of the defective septum and can be covered over with skin or by the method above referred to. The subseptum may be reconstructed by two vertical strips cut in the upper lip beneath the nostril the ends being sutured back to back and turned upward.

The paranasal defect met with are almost always following traumatic sinusitis. They are filled either by cartilage bone or fat grafts covered by skin as before. Guetz illustrates a case of a mediofrontal orifice following injury which destroyed the ethmoid and the middle part of the frontal bone. It was closed by strip cut in the vicinity the cutaneous surface being turned in then the skin above and below it was pulled together and sutured over the reversed strip.

Guetz always uses a general anæsthetic by the intubation method. He pays particular attention to the nasal respiration. He avoids all compressive dressings in the vicinity of the triptoma to prevent circulatory disturbance in them which would cause gangrene. All suture are cut early from the third to the fifth day.

W. A. BRENNAN

Imbert L. and Real P. Fractures of the Lower Jaw (Incoraphie de la mandibule inférieure) *L. f. q. s. v. 38*

The authors who direct the maxillofacial prosthesis at Marseille have observed a very large number of fractures of the lower jaw. Their report is not confined to fractures alone but includes those observed in civil life. They divide mandibular fractures into four types.

1 Median paramedian or symphyseal fracture.
Fracture of the lateral region of the body of the bone.

3 Fractures of the region of the angle.

4 Fracture of the ascending branch.

Fracture of the median region include these varieties (a) without loss of substance (b) with little or medium loss of substance (c) with large loss of substance (d) double paramedian fractures.

Lateral fractures include those (a) without loss of substance (b) with small or medium loss of substance (c) with extensive loss.

Fractures of the angle or of the ascending branch are of the same type.

The authors give a number of photographs of models of these various types of fractures. They have treated more than 1000 cases of maxillary fractures with a mortality of less than 1 per cent.

W. A. BRENNAN

Martin H. H. Treatment of Neuralgia of the Fifth Nerve by Injection of the Gasserian Ganglion *J. Am. Med. Ass. 1918 lxi 190*

Injection of the gasserian ganglion through the foramen ovale for relief of trifacial neuralgia has passed the experimental stage and it is the belief of the author it will supersede the extirpation operation. While the operation requires great skill because of the many important structures surrounding with a careful study of the anatomy and frequent attempts on the cadaver the technique can be mastered. There are no contraindications to the operation.

The operation is done with the patient anesthetized and under surgical precautions. A needle 10 cm long is used after insertion 5 to 10 mm of $\frac{1}{2}$ per cent solution cocaine is injected followed by 0.5 cc of 95 per cent alcohol half injected into the posterior root and half into the ganglion as the needle is slowly withdrawn. The author reports cases.

I. E. BISHOP

Dandy W. E. Extirpation of the Choroid Plexus of the Lateral Ventricles in Communicating Hydrocephalus *Am. Surg. Phila. 1918 lxviii 569*

The author has done considerable experimental work on hydrocephalus and as a result of his work he believes that this disease should no longer be classified as idiopathic because its pathology and in a large part its etiology are definitely established. His studies on the subject include the path of the circulation of the cerebrospinal fluid, the experimental production of hydrocephalus, the pathogenesis of many cases studied clinically by the phenol sulphonephthalein test and the pathology of the various so-called types of hydrocephalus by post mortem examination.

The vast majority of cases of hydrocephalus are included in one of two groups: (1) communicating hydrocephalus (2) obstructive hydrocephalus. The other type are rare. He has prepared the following classification based on the etiology and pathology of the disease.

1 Hydrocephalus due to diminished absorption of cerebrospinal fluid: (a) communicating hydrocephalus (due to adhesions in the subarachnoid space) (b) obstructive hydrocephalus due to (1) congenital atresia (2) adhesion (3) tumors (c) external hydrocephalus.

2 Hydrocephalus due to increased production of cerebrospinal fluid: (a) acute hydrocephalus (increased fluid from inflammatory products in acute meningitis and in trauma) (b) communicating hy-

tuating and seemed to be deeply situated. A diagnosis could not be made so the area was explored under local anæsthesia. The mass was found to be an inflamed thyroid gland embedded in an edematous connective tissue capsule. There was no pus and a cut section of the gland showed simply a round celled infiltration.

The patient however did not make a recovery. The chills ceased but his temperature continued. There was very little suppuration from the wound which was kept open and packed with iodoform gauze. In the bottom of the wound a grayish yellow necrotic looking tissue could be seen. The whole area remained tender although the pain disappeared largely from the neck. The chills commenced to recur with high temperature and it was thought that there was present a septic thrombosis of some large vein in connection with the first diagnosis of an infection and an extensive exploration under a general anæsthesia was decided upon.

A large yellowish necrotic mass which moved with the trachea and which was embedded in an inflammatory capsule was exposed. This mass was hard and represented the right lobe of the thyroid gland. The left lobe of the gland was normal. There was no distinct isthmus. The necrotic right lobe was removed. Immediately following the operation the temperature dropped to normal and there were no more chills showing that the chills and fever were not due to a septic thrombus in a large vein but to the dead thyroid itself. A microscopic examination showed large areas of necrosis, the condition being very much like that of complete infarction. The patient at the time this report was made was going on to a rapid and complete recovery.

The author had never before seen a case of total necrosis of one of the lobes of the thyroid. He thinks that judging by the history of this case the indication in a similar case in the future would be to

make an immediate extirpation of the thyroid lobe provided it is limited to but one lobe. Where the process involves both lobes the better plan the author thinks would be to make a very wide exposure of the necrotic mass with drainage in the hope that in the process of extraction of the necrotic tissue some of the thyroid tissue might be retained sufficient to prevent the condition of myxœdema.

E. C. POOS

Schneider E. H. Syphilis of the Thyroid Gland Report of a Case *Calif St J Med* 1918 xvi 484

Syphilis very rarely affects the thyroid. A case report and review of the literature are presented.

The patient, a woman of forty-eight, had had a small goiter for seventeen years. Three and one-half months previous to examination a small tumor, 1 cm in diameter, appeared in the vicinity of the upper pole of the gland and the goiter disappeared. Pressure on the trachea became marked. Brawny infiltration of the subcutaneous tissue prevented palpation of the thyroid. There was no cervical adenitis. A diagnosis of malignancy was made.

At operation the soft tumor proved to be a putty-like softening of the muscles. The entire thyroid was a mass of fibrocartilaginous tissue closely adherent to the thyroid and cricoid cartilages and to the trachea. A small tumor 2 cm in diameter lay in this tissue and pressed against the trachea causing angulation.

Histologic section showed interstitial proliferation, embryonic connective tissue and giant cells. The blood vessel all showed obliterative arteritis. In places the thyroid tissue was obliterated by connective tissue overgrowth. Other places showed normal tissue. The whole specimen resembled an adenoma.

A blood Wassermann was four plus. A positive history was later obtained. Therapeutic relief was immediate.

J. I. BUCHHEI, DLR

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Hutchinson W. A Study of 450 Cases of Wounds of the Chest, with Special Reference to a New Method of Treatment for Infected Hæmothorax. *Canad M J* 1918 19 811-97

The problems that presented themselves for solution in war surgery of the chest were how to deal with an open pneumothorax, infected hæmothorax and foreign bodies in the lung. The problems have been solved.

In the author's series of 450 cases, 17 were produced by bullets, 50 by shrapnel balls and 13 by pieces of shell. Wounds produced by bullets were the least serious. More than half of the shell missiles, almost half of the shrapnel balls and one-fifth of the bullets were retained. Infection occurred in

nearly a quarter of the shell wounds in which the missile was not retained and in almost half the cases in which it was retained. A relatively small per cent of shrapnel and bullet wounds were infected whether the missile was or was not retained.

Cases were observed in which a bullet passed entirely through the chest without producing any bleeding or leakage of air. Pneumohæmothorax was rarely observed. Pneumothorax may develop either from a valvular wound of the chest wall or lung. The treatment of the former is closure of the associated chest wound, that of the latter providing an outlet through the chest wall for the air accumulating in the pleural cavity. The valvular leak from the lung lead to a positive intrapleural pressure.

Hæmothorax usually from an injured lung. The

The muscles and the pleura are incised and the index finger introduced into the pleural orifice seeks the lowest point a second incision — a drainage thoractomy — is made at the point determined by exploration. If this lowest point is near the first incision it will suffice to enlarge it in the required direction.

Chevrier thinks that disinfection of the pleura by gas or by antiseptic vapors together with drainage at the lowest point as indicated is the best treatment of purulent pleuritis. In the majority of cases fistulae are avoided as well as the severe complicated operations which follow in their wake.

Chevrier insists that the pleura ought never to be drained on the axillary or scapular line even if these are the classical methods for empyema. No pleurotomy gives efficient drainage except when made in the costal line at the lowest part of the detension.

W. A. BRENNAN

Moorhead T. G. Postpneumonic Empyema *Med Press* 1918 CVI 4 6

The aphorism that all case of unrelieved pneumonia are cases of undiagnosed empyema contains a great deal of truth. To appreciate this is to avoid tragic results.

Two classes of empyema cases to which the above applies are the large extensive and the small interlobar or basal collections of pus. In the extensive type the history is that of an influenza followed by pneumonia. The temperature reaches normal or nearly so and after a few days goes up and remains up until proper treatment is instituted. Other symptoms sweating, anorexia, dyspnea etc. are regarded as postinfluenzal. The physical signs may be very different from the classic signs of fluid. Adhesions may limit dullness to the lobar areas breathing may be tubular and even amphoric. Physical signs must therefore be disregarded and exploratory needle puncture must be done in all cases with persistent symptoms. Every practitioner should carry an exploring needle and syringe in his bag.

The interlobar or basal type presents real difficulties in diagnosis. The pus often lies deep and is buried by adhesions. The symptoms are usually those already enumerated. The signs may be misleading. Where the pus lies between lung and diaphragm the symptoms and signs may be referred to the abdomen. Needle exploration must be practiced and once pus is found it should be promptly evacuated.

C. A. HEDBLUM

Biering W. L., Luginbuhl C. B. and Burt C. W. Streptococcus Pneumonia and Empyema in Infection Affecting Fight Members of One Family with Seven Deaths. *J. I. M. S.* 1918 LV 475

The infection occurred in the members of this family was simultaneous with the epidemic report at Camp Dodge by Miller and Lusk. The family lived seventeen miles from camp.

The first seven of the eight cases died after an illness ranging around four to five days. The last two developed empyema. On one of these latter the only one to survive of the family of eight rib resection and drainage was done.

Autopsy was permitted in two cases. In both cases the findings were identical: bronchopneumonia with a seropurulent exudate and a fibrinopurulent pericarditis. Both autopsies and the cultures from the lost case of empyema showed a hemolytic streptococcus which was evidently the cause of the remainder of the cases.

Each case was characterized by sudden onset there was no preceding history of measles or ton ill its.

J. R. BUCHHEIMER

Nims C. II. Empyema. Some Observations Made in the Fluoroscopic Study of a Series of 64 Cases. *Mil Surgeon* 1918 LIII 538

From a fluoroscopic study of empyema as it occurred as a complication in pneumonia cases at an army camp Nims observed that free collections of pus in the pleural cavity are usually preceded by small collections between the lobes. In many cases clear fluid could be aspirated from the free pleural cavity in the presence of pus between the lobes. He distinguishes three types: the incisural, the paravertebral and the ordinary peripheral type.

In the incisural type the pus lies between the lobes. By rolling the patient slightly it could be observed in the fluoroscope as a thin sheet between the lobes. The thinness of the sheet he thinks may explain frequent failure to aspirate pus on a second sitting after it has once been found.

In the paravertebral type the pus extends along the bodies of the vertebrae. In the peripheral type the pus occurred free in the pleural cavity.

Tabulating 64 cases on this basis Nims found 43 classed as incisural, 5 as paravertebral. Many of the remaining 16 cases of the peripheral type the author believes were at first localized. Cases of streptococcus hemolytic infection he found much harder to interpret than the ordinary pneumococcus cases.

Patients are examined for diaphragm motility, heart displacement and for collections of fluid by observations at various positions. In this way a shadow in the ordinary anteroposterior view may in the more lateral view resolve itself into a thin sheet of fluid in the incisural.

C. A. HEDBLUM

Achard C. Experimental Study of Mediastinal Empyema (Étude expérimentale de l'empyème du médiastin). *Bull. Acad. de Médec. P. R.* 1918 LX 7 600

The author's experimental study of mediastinal empyema was made on dogs and verified on human cadaver. The cellular mediastinal tissue can be insufflated with air in different ways either directly or indirectly at a distance. This diversity agrees with the diversity of pathological causes which determine mediastinal empyema.

By direct insufflation of air into the mediastinum

blood may be clotted or fluid The fluid blood on
being with a n ill not clot Se um and not
blood may be found in the pleural c v ty The
amount of hæmorrhage a fluid i increased l v th in
inflammatory se um in inf on Infect i blood i
usually dark and thi k and may b e ful melling
Streptococcus nt ction oc ur ed in n urly on
third gas b llus in e fou th pneum o c us and
med infection a h in al out e ffit f the cases

The lung may collapse from the important reason
 side on the chest wall. Collapse of the lung occurs
 in the vicinity of a tear. The small odd little
 stop bleedages are generally in the lung quic-
 kly encapsulated by collapsed lung blood clot
 inflammatory tissue. Very few lung abscesses
 develop.

Pleur 1 udite 2 1 pn um n n y ! v l p on
the ile oppo it the ne ju e l Turul nt peri
carditis oc urred n 3 s an ur m f th gr t
v sel n

The important function of the early recognition of infantile learning is the proof of infantile learning. The Occasional report of the necessary infantile learning must be ferreted from the infantile learning lung, the certain must be fluid in the firm pulse temperature and put in the growth in the latter usually the temperature also high.

The t tment f mpl ninf t u hām
tho x asp r t o i f t l b l d lott l l h a
cotomy e cu t i n f the cl t t ght cl u f th
chest ll an l spir t i n f a left n i r m
d f

Open pneumothorax is caused by multiple
cleansing glandular infection of the
section of the lung ombilical nodule
of the end of the nodule the manual removal
of the lot of the cavity and all the
anterior and lateral cure the alveolar
tissue. Of course, it is treated in the
verruca period. After forty-eight hours the
period of the first lies the author
hull in the mucus from the lung tissue
hospital.

Of the 45 held of Sept 21 to 6 of
some of the 11 men the without compl
ction. Not one of the 27 were operated upon

B a d L n d Dun t C T eatment f P r l nt
Post r pp l P e u l l e s Ant r l o r Ax l l r y D n
g e a d Int r m i t t e n t I g a t i o n (T r m t m t
l p l r l t e p o t g p p l l g
l l l l t t d t) B l l
l d d t l a s l 6

The epidemic of grippé has shown a very considerable proportion of pleural complications. The authors only treat of true purulent pleuritis. These they treat by pleurotomy and drainage which has given them excellent results.

The incis on 1 made in the eighth or ninth space

in front of the posterior axillary line. This serves only for the evacuation of pus and for the exploration of the pleural cavity by the finger in order to determine the lowest point for drainage. The pleural drainage at the lowest point is according to the authors the most important part of the operation. Ileutic patients as a rule take the sitting or the half sitting position and hence the lowest point will be anterior and at the level of the ante or costodiaphragmatic cul de sac. This is the point to drain. A second incision about 6 to 8 cm long made on the anterior axillary line. This large incision permits complete evacuation of the contents of the cul de sac including the remnants of the pyogenic membrane which has lined the pleural cavity. It is also necessary to suture out the pleural cavity by attaching to a long forceps.

One to three Carrel tubes are introduced through the first pleurotomy incision and irrigation is commenced by four hours after the operation and repeated every three hours.

The technique has given the authors very satisfactory results in 22 cases. There are only deaths due to concomitant bronchopneumonia. The recoveries were rapid and satisfactory.

W. A. BREYNA

Ch rier L Study of Pleural Drainage Treat
ment f Cl ice of Purul nt Pleurisies (Ét d
l dr ge d l pl t tème t de ch u
l j t p ul t) P e m d Par 99

Chervin et al. (1973) found that there is only one legal and simple method of drainage of the pleural cavity. They recommended the poor methods of drainage. They have experimentally tested several of the recommended methods. In cadavers placed both in the vertical and decubitus position and has studied the pleural retention in the different cases. The retention of the scapular rib in the posterior axillary line, the retention of 1250 to 1300 ccm in the recumbent position and 650 ccm in decubitus in the retention of the scapular rib in the scapular line. There are retention of about 20 and 1300 ccm in the next study as before.

U lly, the costodiaphragmatic cul de sac is considered the lowest part of the pleura but Chevrnier find that the laterovertebral depression is lower and that effective drainage depends on the reflection not being at the level of the bottom of the depression but at the angle of the ribs on the costal line. In a pathological pleura Chevrnier shows that the bottom of the costodiaphragmatic cul de sac is raised up but no method of drainage other than permits the finding of the very lowest spot on the costal line in the bottom of the pleural cavity. A special technique is therefore necessary.

The patient being in lateral decubitus on the healthy side Chevrer make an exploratory puncture in the costovertebral region after radio copy. The incision is then made parallel to the rib immediately above the limit of positive puncture.

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Nims C. H. Empyema: Some Observations Made in the Fluoroscopic Study of a Series of 64 Cases. *Mil Surgeo* 1918 XLIII 538

From a fluoroscopic study of empyema as it occurred as a complication in pneumonia cases at an army camp Nims observed that free collections of pus in the pleural cavity are usually preceded by small collections between the lobes. In many cases clear fluid could be aspirated from the free pleural cavity in the presence of pus between the lobes. He distinguishes three types: the incisural, the paravertebral and the ordinary peripheral type.

In the incisural type the pus lies between the lobes. By rolling the patient slightly it could be observed in the fluoroscope as a thin sheet between the lobes. The thinness of the sheet he thinks may explain frequent failure to aspirate pus on a second sitting after it has once been found.

In the paravertebral type the pus extends along the bodies of the vertebrae. In the peripheral type the pus occurred free in the pleural cavity.

Tabulating 64 cases on this basis Nims found 43 classed as incisural, 5 as paravertebral. Many of the remaining 16 cases of the peripheral type the author believes were at first localized. Cases of streptococcus hemolyticus infection he found much harder to interpret than the ordinary pneumococcus cases.

Patients are examined for diaphragm motility, heart displacement and for collections of fluid by observations at various positions. In this way a shadow in the ordinary anteroposterior view may in the more lateral view resolve itself into a thin sheet of fluid in the incisura.

C. A. HEDGECOCK

Achard C. Experimental Study of Mediastinal Empyema (Étude expérimentale de l'empyème du médiastin). *Bull. Acad. de Méd. Par.* 1918 LVXX 609

The author's experimental study of mediastinal empyema was made on dogs and verified on human cadavers. The cellular mediastinal tissue can be insufflated with air in different ways either directly or indirectly at a distance. This diversity agrees with the diversity of pathological causes which determine mediastinal empyema.

By direct insufflation of air into the mediastinum

forceful dilatation of stricture but feel that it is a dangerous procedure with anything but a single stricture of a limited area

The maximum dilatation should be held by passing a specially adapted olive bulb at frequent intervals. In gastrostomized cases the stomach tube should be retained even after dilatation is well advanced to give confidence to the patient. The work is tedious and slow and much depends upon the willingness and co-operation of the patient.

J. P. BLICHNER

Kotzaroff A. Oesophageal Imperforation (Imperforation de l'oesophage). *Ann. de gynéc. et d'obst.* Par 1918 lxxii 203

The child in the author's case with birth and antecedents normal showed severe cyanosis with symptoms suggesting a hypertrophied thymus or retrosternal goiter. The child did not feed and rejected food. After a few days the thymus was removed. Conditions did not improve and the child died on the ninth day after birth. Autopsy showed that there was an imperforate oesophagus occlusion being due to a ligament uniting the trachea and oesophagus which was situated slightly above the bifurcation of the trachea. There was complete arrest of development. The condition is illustrated by a number of photographs.

This type of congenital malformation of the digestive tract is rare only a few cases having been reported. Embryologically the oesophagus develops from the anterior part of the endoderm together

with the trachea. Hence concomitant malformations of trachea and oesophagus are usual. It has been explained that congenital anomalies of the oesophagus occur by pressure of the large vessels especially the subclavicular. While such an hypothesis might explain several of the cases the author cannot accept it as universally true. Sometimes the oesophagus alone fails to develop and sometimes both trachea and oesophagus. The author does not offer an explanation unless it be due to some vascular or nervous failure by which the organs remain in a rudimentary condition.

The types of anomalies which may present clinically are (1) congenital stenosis (2) imperforation of the oesophagus (3) closure of one end or complete absence of the oesophagus. The latter two types have usually a fatal ending.

Diagnosis is easy when the condition is suspected. The symptoms are difficulty of deglutition immediate or very rapid rejection of nourishment and signs of suffocation. Vomiting is not an indication. The condition may be verified by catheterization or X-ray.

The only treatment is surgical the usual method being a gastrostomy. Death followed in 4 cases in which this was done. This was not due to the operation nor to its technical difficulties. The infant dies from infection or pneumonia. According to Witzel jejunostomy gives good results. When the anomaly exists above the cardia von Hacker's operation is indicated and the author refers to a case in which it was successful.

W. A. BRENNAN

SURGERY OF THE ABDOMEN

GASTRO INTESTINAL TRACT

Crohn B. B. Studies in Fractional Estimation of Stomach Contents. *J. J. M. S.* 98 cl 1 656

The method of fractional estimation of stomach contents has been used previously as a means of studying the direct effect of alkali upon gastric digestion. The same method is used by Crohn in the following experiments in order to determine the results following therapeutic administration of HCl and the best method for its administration.

A patient suffering from pernicious anemia or achylia gastrica was given 40 minims of dilute HCl and the stomach emptied by a punction. Directly after administration the total acid was 40 per cent and the free acid 3 per cent. Specimens withdrawn every five minutes showed a rapidly diminishing acid titer until no trace was left in twenty-five minutes.

HCl administered fifteen minutes before the test meal of oatmeal gruel resulted in a free acidity of 0 per cent and total acidity of 24 per cent. The acid had practically disappeared in fifteen minutes exerting no influence on the normal acid secretion.

When the HCl was administered with the test

meal a slight increase in acidity was noticed only during the first half hour.

Administration of 60 minims fifteen minutes after the test meal resulted in complete failure to relieve acidity. When this dose was doubled and given under the same conditions the increase in acidity was noticed for the first half hour.

No effect was seen when 60 minims HCl was administered one and one-half hours after the test meal. However when 30 minims were given three quarters of an hour after the test meal was ingested a slight acidity was noticed to the end of digestion.

Ten minims of dilute HCl administered every half hour produced a definite increase in total acidity throughout the digestive cycle though free acid was not produced at any time.

When 10 minims of HCl were administered every fifteen minutes during digestion an acid titer of 68 per cent was maintained. The motility of the stomach was unchanged and emptying took place in two and one-quarter hour.

One striking fact in these experiments is the rapid disappearance of the acid. Another is that the titer which results upon the introduction of acid is not maintained but rapidly neutralized. The pro-

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G W HOCHEM

Eisberg H B and Draper J W Intestinal Obstruction Continued Studies *J Am M Ass* 1918 11: 1634

Additional evidence accumulating that death caused by intestinal obstruction is due to toxins originating in the epithelium of the duodenum and its appendages. The authors have divided their study of this problem into three phases: transplantation, protease isolation and obstruction ratio.

The entire duodenum with its outbud, the pancreas and liver are separated from the alimentary canal. The pyloric end of the segment and the stomach are occluded, the duodenum is anastomosed to the ileocejunum and posterior gastrojejunostomy is performed. This constitutes the primary operation. From two to three weeks after obstruction by section and infolding 35 cm. aboral to the gastrojejunostomy was produced. The corresponding position to the duodenojejunal obstruction. As a result the dogs operated upon lived seventeen days or three days longer than after obstruction in any part of the small intestine except the sphincter. Moreover duodenal transplantation prevented the occurrence of classical symptoms of duodenal obstruction. The conclusion is that the duodenum with its embryologic outbud furnishes the cause of death.

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The belief that bacteria is the sole cause of death in intestinal obstruction is contradicted by the fact that the duodenum is virtually bacteria free and also that closed segments of the terminal ileum and colon remain where bacteria abound are not incompatible with long life. Observers agree that the most active manifestations of the toxin of intestinal obstruction in which is believed to be of the same nature as the endocrine secretion occur during duodenal obstruction. A point in the second portion of the duodenum at which acute obstruction causes death more rapidly than elsewhere in the intestine is known as the true lethal line. Oral or aboral to this line there is a proportionate decrease of obstructive toxicity.

The exact ratio is not yet determined but the fact remains that there is a constant mathematical ratio.

T P HAMMOND

Grey E G Studies on the Aseptic End to End Anastomosis of the Intestine *Bull Johns Hopkins Hosp* 1918 21: 267

For many years attempts have been made by surgeons to devise practical methods for the end to end anastomosis of the intestine which would minimize the amount of soiling of the suture line and of the neighboring abdominal structures. As a result a number of interesting suggestions have been made by various authors. The method to which the best clinical results have been ascribed however have all made use of instruments all or some of which had to be extricated from the line of closure in the concluding steps of the operation. Such procedures of course either leave the lumen temporarily occluded with crushed bowel or expose the line of anastomosis to soiling from within.

A short time back Halsted suggested the bulkhead suture for this purpose, a procedure which was also rather novel at the time and which afforded certain distinct advantages over the methods then in use. He demonstrated on dogs that a successful end to end anastomosis of the intestine might be carried out in an aseptic manner except as contamination may occur from stitches which of necessity or by accident have been carried into the lumen of the intestine. Until some substitute is discovered for the needle and thread it will be necessary always to reckon with this source of contamination. The fact however that with care the operator may prevent most or all of the stitches from entering the lumen greatly lessens the importance of this factor.

The experiences presented in this report were encountered in the course of some experiments with this method conducted on dogs. Although the procedure described here differs from that used by Halsted in certain details it nevertheless makes use of the characteristic feature of the bulkhead suture, namely the invagination of the closed ends of the intestine with subsequent crutization of them to reestablish the lumen. The wire release ligature and the fibrin bolus have been substituted for the cones of paper.

The absence of any recorded microscopic examination of intestinal anastomoses made with the bulkhead suture suggested to the author the desirability of comparing the rate of healing in such anastomoses with that occurring in the simple open end to end unions of the bowel. Such a study it was thought would also afford some opportunity to observe the effects of the use of the cautery on the rate of healing in intestinal wounds.

The first step in the operation is identical with that described by Halsted. At the point of election the peritoneal and muscular coats are divided and stripped back on the submucosa far enough to enable the operator to place two ligatures around the gut

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G. W. HOCHREIN

Eisberg H. B. and Draper J. W. Intestinal Obstruction. Continued Studies. *J. N. H. 155*
1918 LXVI 1634

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F. P. HARRISON

Grey E. G. Studies on the Aseptic End to End Anastomosis of the Intestine. *Bull. Johns Hopkins Hosp.* 1918 LV 267

For many years attempts have been made by surgeons to devise practical methods for the end to end anastomosis of the intestine which would minimize the amount of soiling of the suture line and of the neighboring abdominal structures. As a result a number of interesting suggestions have been made by various authors. The method to which the best clinical results have been ascribed, however, have all made use of instruments, all or some of which had to be extricated from the line of closure in the concluding steps of the operation. Such procedures of course either leave the lumen temporarily occluded with crushed bowel or expose the line of anastomosis to soiling from within.

A short time back Halsted suggested the bulkhead suture for this purpose, a procedure which was altogether novel at the time and which afforded certain distinct advantages over the methods then in use. He demonstrated on dogs that a successful end to end anastomosis of the intestine might be carried out in an aseptic manner except as contamination may occur from stitches which of necessity or by accident have been carried into the lumen of the intestine. Until some substitute is discovered for the needle and thread it will be necessary always to reckon with this source of contamination. The fact, however, that with care the operator may prevent most or all of the stitches from entering the lumen greatly lessens the importance of this factor.

The experiences presented in this report were encountered in the course of some experiments with this method conducted on dogs. Although the procedure described here differs from that used by Halsted in certain details it nevertheless makes use of the characteristic feature of the bulkhead suture, namely, the invagination of the closed ends of the intestine with subsequent cauterization of them to re-establish the lumen. The wire release ligature and the fibrin bolus have been substituted for the cones of paper.

The absence of any recorded microscopical examination of intestinal anastomoses made with the bulkhead suture suggests to the author the desirability of comparing the rate of healing in such anastomoses with that occurring in the simple open end to end unions of the bowel. Such a study it was thought would also afford some opportunity to observe the effects of the use of the cautery on the rate of healing in intestinal wounds.

The first step in the operation is identical with that described by Halsted. At the point of election the peritoneal and muscular coats are divided and stripped back on the submucosa far enough to enable the operator to place two ligatures around the gut

to the case it may be intestinal reaction or it may arise through the blood as in syphilis for example.

In chronic constipation due to pericolic medical treatment should first be instituted varying the therapeutics according to clinical symptoms. When this fails surgery is resorted to. Sectioning the membranous constrictive bands corrects the intestinal kinks and peritonization of the bleeding surface when such is feasible results most satisfactorily. Omentum is used for the peritonization. The author does not employ oily substances to avoid formation of new adhesions but gives strict care to the drying of the cavity the least portion of blood remaining in the abdomen being carefully swabbed and also seeing that the sectioned membranes no longer bleed. Moreover care must be taken that the freed intestine is placed in the proper position. Treatment must not end with operation as such patients in order to be radically cured require adequate supplementary medical supervision.

In one case the author was obliged to perform a total colectomy and from the results in this case he concludes that the colon is not essential to the life of the patient and that in some cases this operation is very favorable in patients with chronic constipation.

With regard to ileocecal megacolon the author gives clinical histories of 8 cases treated operatively. Generally it is easy to relieve such patients at their first or second attack but for various reasons they fail to observe the regime imposed upon them and the condition recurs in an aggravated form.

The author therefore thinks that in the surgeon's duty to perform a radical operation in the first instance removing the entire megacolon. The author's technique consists in resecting a portion of the megacolon followed by an end to end anastomosis and peritonization. The technique covers fifteen separate stages each of which is detailed and many illustrated. The author is particularly careful in exteriorizing the megacolon until the colon is seen to be healthy without paying any regard to the future anastomosis.

In making the anastomosis the posterior sero-serous suturing is first done with No. 0 catgut. The posterior seromuscular posterior mucomucosa anterior seromuscular anterior seroserosa suturings then follow in the order named making three superimposed suturings thus in the posterior semi circumference (1) seroserosa (2) cromuscular (3) mucomucosal in the anterior semi circumference (1) a common perforating suture (2) seromuscular and (3) seroserosa. This gives a firm hæmostatic closure to the anastomosis.

The conclusions based on the author's experience are:

1. The etiology pathogenesis and pathological anatomy indicate colectomy as the treatment of acquired ileocecal megacolon* and this operation is best calculated to cure such patients.

The technique described and followed by the author has given excellent results. This technique

is difficult and requires conscientious detailed and skillful work.

3. In patients whose livelihood depends on hard labor and who cannot provide themselves with the proper hygienic care colectomy is peremptorily indicated but in the case of well to do persons a rigorous medical treatment will answer. When the fecal impactions are repeated despite medical care and dietetic restrictions colectomy should be done irrespective of the patient's social status.

The mortality in the author's cases was 1 per cent (1 death in 8 cases). The other 7 patients have been followed for more than a year all have benefited and show no new complications.

W. A. BRENNAN

LIVER PANCREAS AND SPLEEN

Whipple A. O. History Analysis Applied to Surgical Diseases of the Biliary Tract and Pancreas
Int. Surg. Phila. 1918 LXVIII 471

The author has drawn up and presents an outline of history for the study of surgical disease of the biliary tract and pancreas. This includes in great detail the anamnesis the physical examination the laboratory and clinical findings the discussion of the pre-operative diagnosis the pathological reports the notes on the postoperative course and complications the discussion of the case by the operator and house surgeon in case of death the autopsy report an analysis of the cause or causes of death and finally an accurate follow up record.

Present methods of record keeping are incomplete and inaccurate. He emphasizes the necessity of unit history in which accurate ante and posthospital as well as hospitalization records are accurately made. Only from such records can clinical research be conducted.

From such a study of 400 surgical cases of diseases of the biliary tract the author concludes:

1. Aside from the typical character and radiation of the pain in biliary colic the most constant symptoms of gall bladder disease are those of indigestion, i.e. a feeling of epigastric distress or a distended or bloated feeling in the epigastrium or left upper quadrant and the belching of gas. This group of symptoms occurred in 78 per cent of the cases.

2. These symptoms are of much longer duration than is usually appreciated especially in women. This places the onset of the cholecystitis or cholelithiasis in an earlier decade than is usually given certainly in women the disease usually begins in the third or the fourth decade during the active child bearing period.

3. Cholelithiasis was present five times more frequently in women than in men in this series. Eighty per cent of these women gave a history of one or more pregnancies. Thirty two per cent of the parous women gave the history that their first attacks of biliary colic occurred during the later months of pregnancy. The fact that many women

gave the history of onset of symptoms during the menopause taken in conjunction with the facts relating to pregnancy emphasizes the importance of a hypercholesterolemia as a causative factor in gallstone disease.

4 Jaundice was not a prominent symptom or physical sign in this series only 35 per cent giving the history of jaundice and only 20 per cent having jaundice in skin or sclera at the time of examination.

5 Involvement of the pancreas as observed at the time of operation in the form of an enlarged indurated organ or the so-called "creaky lymphangitis" of Aronberger also indicated at on the head of the pancreas about the common duct a present in 36 per cent of the cases. This was found not only in the common duct to the area but in many cases in which the gallbladder did not appear markedly diseased but where the lymphatic drainage of the gallbladder and duct was enlarged and many cases having the so-called "berry" gallbladder thickened tone. Such cases gave much better results than cholecystectomy and cholelithotomy than the treatment of cholecystectomy. In the latter series the symptoms of fat and protein intolerance were reduced and improved more frequently.

In a series of chronic pancreatitis prolonged drainage of the common duct with cholecystectomy gave a better result both from the standpoint of immediate operation and the long-term results of the symptoms than in the case of cholecystectomy alone. It was made to delay the operation until the drainage of the pancreas was established.

6 Although the frequency of the gallbladder or outpouching inflammation about the gallbladder and duct was generally not statistically significant, the frequency of the gross anatomical findings of the liver was particularly striking. The findings of the liver were particularly striking in the case of the patient with the large tumor of the liver. In both the case of the patient with the large tumor of the liver and the patient with the large tumor of the liver, the findings of the liver were particularly striking. In both the case of the patient with the large tumor of the liver and the patient with the large tumor of the liver, the findings of the liver were particularly striking.

7 Postoperative pneumonia proved to be the most frequent major complication.

8 In the common duct obstruction the operation of cholecystectomy and cholecystectomy with common duct exploration was performed. In the case of the patient with the large tumor of the liver, the findings of the liver were particularly striking.

The operative results were both a primary and a secondary operative result in these cases.

that proved to be unquestionably effective and in several cases life saving was the intravenous infusion of a 10 per cent calcium lactate normal salt solution. This was given in a 200 to 500 cc. quantity. By coagulation time tests it lowered the clotting time by one third to one half in the case in which it was tried. In the deeply jaundiced patient where it was used four to six hours before operation on no persistent bleeding occurred in the case where it was given after oozing from the wound had become pronounced the bleeding was invariably stopped. It is a means of treating hemorrhage it proved very much more efficacious than the administration of blood serum treatment or blood transfusion.

9 Comparison of the results following operations for gallstone disease with those for gastric and duodenal ulcer and so-called chronic appendicitis very much in favor of gallbladder surgery. In the case of the interval result system has been a comparison at the Leiden Hospital a period of 10 years one found complete success in 100 per cent of the cases. In the case of the interval result system has been a comparison at the Leiden Hospital a period of 10 years one found complete success in 100 per cent of the cases. In the case of the interval result system has been a comparison at the Leiden Hospital a period of 10 years one found complete success in 100 per cent of the cases.

Summary of the Results of the Operation of Cholecystectomy with the Tissue of the Kidney and the Intestine Complications of the Operation

The patient with the large tumor of the liver was particularly striking. The findings of the liver were particularly striking. In both the case of the patient with the large tumor of the liver and the patient with the large tumor of the liver, the findings of the liver were particularly striking.

Operation of the left kidney was removed by operation. The patient on whom the operation was performed by the left kidney was particularly striking. The findings of the liver were particularly striking. In both the case of the patient with the large tumor of the liver and the patient with the large tumor of the liver, the findings of the liver were particularly striking.

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easily palpated and could readily be seen bulging that portion of the abdomen

An upper left rectus incision was made. Upon exposing the viscera there was an attachment of the ileum to about the center of the transverse colon which when liberated disclosed that there was a fecal communication between this loop of the ileum and the transverse colon. The opening in both ileum and colon was sutured. The fistulous opening in the colon was also closed. The globular tumor mass in the upper abdomen proved to be a pancreatic cyst about the size of a large grapefruit. It had a good sized base and after careful palpation of its outline and attachments it was deemed impossible to do otherwise than to drain it.

After careful suture of the pancreatic cyst wall to the parietal peritoneum the cyst was aspirated and incised liberating about a pint of light straw colored fluid which upon chemical analysis proved to be pancreatic fluid. The cavity of the tumor was packed with gauze. Rubber tissue drains arranged to come out of the lower end of the wound were applied in the abdomen to the location of the intestinal suture. The patient rallied nicely from the operation but for about two weeks there was a very extensive drainage from the cyst which was very excoriating to the surrounding surface. The drainage gradually lessened and finally as the wound healed it ceased altogether. The patient's condition steadily improved and at the present time all evidence of defective metabolism is absent. She has gained in weight very materially and is now strong and vigorous.

EDWARD L. CORNFEL

MISCELLANEOUS

Saviozzi, V. Penetrating Gunshot Abdominal Wounds (Ferite d'arma da fuoco penetranti dell'addome). *Chin. ch. Milano* 1917-19 8 x 486

The author reviews the history of abdominal war wounds since the War of Secession down to the present war. His article is accompanied by a number of short case reports and illustrative charts. His survey of the subject brings him to the conclusion that the only rational treatment of the class of injuries is laparotomy done as early as possible. It should be done either in the mobil surgical ambulance or in special hospitals not distant more than 8 to 15 kilometers from the firing line and protected against artillery.

The cases observed were 101 in number all penetrating abdominal wounds 30 of which were operated upon and 71 not operated upon. In the operated case the mortality was 70 per cent and in the non operated 64.6 per cent.

At first glance the figures seem to be in favor of abstention but analysis of the case shows that in operations done within the first 12 hours the mortality was 35.50 as against 90 per cent in cases operated upon after that period and that in lesions of the gastro intestinal tube the mortality was 54.1 per cent as against 80 per cent in non operated

cases. Postmortems however have shown that spontaneous recovery from true gastro intestinal lesions are rare that some cases might have been saved by operation and that in the operated cases failure was due either to the fact that the lesion was beyond surgical aid or that operation was carried out too late.

The findings show that early operation is especially called for in wounds of the umbilical and hypogastric regions when such injuries are amenable to surgery. Five of the operated cases would undoubtedly have died if not operated upon. Cases with spontaneous recovery are almost always injuries in the flanks and in the inguinal regions. The non operated cases with fatal termination almost all belong to the umbilical and hypogastric zones.

For bladder wounds the author recommends cystostomy with repair of the bladder.

W. A. BRENNAN

Pfahler, G. L. Importance of a Complete Roentgen Study of the Gastro Intestinal Tract and Gall Bladder in All Obscure Abdominal Cases. *J. Am. Med. Ass.* 1918 LXVI 1951

Since roentgen studies of the gastro intestinal tract are generally limited to obscure cases they should be thorough and complete if positive value is to be obtained from them. They should include the investigation of the gall bladder region for gall stones enlargement and adhesions, a study of the stomach to prove that it is either normal or abnormal and if abnormal in what respect it is abnormal, a study of the duodenum, a study of the head of the pancreas, a study of the course of the food through the small bowel, a study of the appendix and the appendiceal region, a study of the colon, and very often it is advisable to make a study of the spinal column and of the urinary tract. The greatest stress should be laid on the organ under suspicion or on the organ which during the course of the examination suggests some pathologic condition.

The author describes the examination he usually makes and elaborates upon the findings thus obtained relative to the stomach, pylorus, duodenum, gall bladder, small bowel, appendiceal and cecal regions. The important diagnostic points with reference to the appendix and chronic appendicitis are dwelt on at some length. A complete examination may disclose multiple lesions whose combined symptomatology may render the case obscure. Treatment covering all of them may be essential to effect a cure.

The author draws the following conclusions:

1. A complete roentgen study should be made in all obscure abdominal cases.

Such a study should determine each organ to be either normal or abnormal and if abnormal the nature of this abnormality should be carefully described.

3. The diagnosis of carcinoma if present may practically always be made.

4 The absence of carcinoma may in many instances be proved
 5 Gastric ulcer may be recognized in a number of ways
 6 Duodenal ulcer may be recognized probably 95 per cent of the case
 7 Gall stones may be recognized in approximately 50 per cent. Other evidence of gall bladder disease may be obtained in a percentage of cases
 8 Chronic appendicitis may be diagnosed practically all in the cases
 9 Incompetence of the ileocecal valve may be recognized and ligated easily by the procedure

10 Defect in the splanchnic filling defect and abnormal function of the bowel may be recognized by this method better at times than by operation
 Diverticulitis may be recognized only by this method
 11 Carcinoma of the rectum may at times be more definitely determined as to its position location and extent than by a proctoscopic examination
 12 Patients generally obtain a great deal of benefit from the treatment helpful in the cure of their disease
 The result of complete study of this kind
 ADOL HAR

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES TENDONS CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Barrie G. Hemo-lagi Osteomyelitis and Synovitis
 Common in Bone and Joints

Barrie discusses the general history of the disease as seen in the various types of bone and joint disease. The slow growth of the disease is characteristic. The symptoms are pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery.

Chronic hemorrage, osteomyelitis, and synovitis are the most common diseases of the bones and joints. The disease is characterized by a slow growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery.

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A true malignancy of the bone and joint is characterized by a rapid growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery. The disease is characterized by a slow growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery.

De Mier says he makes this statement. The giant cell tumor is a borderline lesion between an inflammatory and a neoplastic. This is a concession to the bone.

The paper concludes with the following summary. In the investigation and study demonstrate that the same type of scavenger giant cell is frequently present in lesions of the bone that are purely inflammatory. The tumor is a malignant sarcoma of bone. The tumor is medullary giant cell sarcoma should be labeled because it does not express the true dividing condition existing in bone lesions or plasm.

The diagnosis of a sarcoma in bone should be confirmed by the predominance of the neoplastic tissue. The tumor is a malignant sarcoma of bone. The tumor is medullary giant cell sarcoma should be labeled because it does not express the true dividing condition existing in bone lesions or plasm.

Renwick: The Etiology and Treatment of Acute Poliomyelitis

The author states that the present report deals with the etiology and treatment of acute poliomyelitis. The disease is characterized by a rapid growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery.

The author states that the present report deals with the etiology and treatment of acute poliomyelitis. The disease is characterized by a rapid growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery. The disease is characterized by a slow growth and by the presence of pain, swelling, redness, and tenderness. The diagnosis is made by the history, physical examination, and roentgenogram. The treatment is by rest, drainage, and surgery.

fresh glycerolated and filtered virus. The serums of persons and of monkeys having recovered from poliomyelitis agglutinate specifically the more sensitive strains both from human and monkey poliomyelitis. Injections of the recently isolated aerobic cultures into monkeys render them refractory to virus. The aerobic form of the organism from human and monkey poliomyelitis produces antibodies in the serum of horses in a large amount common for both cross agglutinating these strains specifically in high dilution. The serum of a horse immunized with freshly isolated strains from monkeys protected monkeys relatively against intracerebral inoculation of virus and had pronounced curative effects in the treatment of human poliomyelitis. Early intravenous injections were followed by almost immediate cessation of symptoms in a large series of cases.

The results of Flexner and Noguchi so far as the cultivation of a small filtrable organism and its demonstration in the tissues in poliomyelitis are concerned have been corroborated but the results of the author's experiments indicate that this is the anaerobic and according to Amoss results a non antigenic form of the organism which under aerobic cultivation clearly belongs to the streptococcus group of micro organisms. Both forms have been constantly demonstrated side by side in the tissues of poliomyelitis. Flaccid paralysis coming on soon after injection has been produced in monkeys with characteristic although not typical changes in the cord with aerobic cultures but the classic picture as obtained with virus in this species has not been secured. It may be suggested however on the basis of results already obtained that this is due to development of antibodies since the organism in the aerobic form has marked antigenic powers.

Vitrac I Sarcomatous Development in the Depth of the Right Thigh in the Trajectory of a Recent Wound (*Production d'allure sarcomateuse développée dans la profondeur de la cuisse droite sur le trajet d'une blessure récente*) *Ga hebdomadaire de médecine Bordeaux* 1918 xix 154

In the case of a soldier wounded in the right thigh the projectile a piece of shell had penetrated through the muscle masses to the popliteal region without injuring either the vessels or nerves. There was some slight infection but the wound healed and cicatrized. A new inflammation followed then stagnation with the appearance of a swelling which regularly increased in size without any inflammatory reaction. This was clinically a tumoral condition. The man was operated upon and the hardened tumor mass which was situated posteriorly in the injured muscles was enucleated. Histologic examination showed that the mass consisted of normal muscle tissue with fibroconnective tissue very dense and thick and enclosing muscle fibers and also of a central tissue manifestly neoplastic round celled and showing a rich vascular network. Histologically this last tissue was angiosarcomatous.

The author says that he had formerly seen in

stances in cases operated upon by him where a deeply situated cicatrix had become tumorous and had increased in volume as in the case now reported. Histologically such are cases of true fibroma developed in a hæmorrhagic or infected area which had never been completely absorbed and can be classed as fibroconnective tumors. The tumor in the present case belongs to the class of embryonal tumors of sarcomatous type which usually have a quite different origin. W A BRENNAN

Henderson M S Loose Osteocartilaginous Bodies in the Shoulder Joint *Am J Orthop Surg* 1918 xvi 498

The author discusses three different types of loose bodies those occurring (1) by direct trauma in reality a fracture (2) by a pathologic condition in the joint surfaces making them more brittle than they should be (osteocondritis dissecans) in which pieces readily desiccate or chip off (3) by the synovial membrane becoming hypertrophied the redundant tag becoming cartilaginous on the tip and as they grow and become heavier breaking off and becoming true osteocartilaginous bodies (osteocondromatosis) (4) by the marginal osteophytes resulting from hypertrophic arthritis breaking off and (5) as a part of a general process such as a Charcot joint. He has on a number of occasions removed loose bodies from the knee from bursa and from the elbow but only once from the shoulder. The history of the case is as follows.

July 9 1918 a well developed robust young woman aged twenty years presented herself at the Mayo Clinic for examination complaining of pain in the right shoulder. The pain was irregular coming in attacks lasting from one to five minutes and was followed by complete relief except for a slight aching and soreness. The attacks came on usually when the patient reached for something particularly if she reached forward outward and upward. She had had the trouble since she was eight years of age there was no history of any previous injury. For months at a time she had absolutely no trouble but of recent years there had been a tendency for the attacks to increase in frequency and somewhat in severity. The last attack about two weeks before examination had been especially severe causing her to cry out with pain. The symptoms suggested more of a mechanical than an inflammatory condition.

The shoulder was negative to inspection but on deep palpation there was a suggestion of something slipping under the fingers as would occur if loose bodies were in the joint. The roentgenogram showed multiple shadows around the glenoid cavity similar to those cast by loose osteocartilaginous bodies in other joints. July 18 1918 the right shoulder was opened by a posterior incision. The posterior route was chosen as the capsule is quite thin in this region and it is only necessary to spread the fibers of the infraspinatus and teres minor before the capsule is met with. By palpation from the outside and manipulation of the shoulder thus forcing the loose

closes the wound with a rubber drain which is left there for twenty four to forty eight hours. If the case be seen from six to eighteen hours after injury he believes in the removal of all tissues that may have become infected. Later than that certainly after twenty four hours the less done the better outside of the removal of all foreign material the adjustment of fragments making and keeping ample opening of the wound area for thorough cleansing and after treatment. This consists of the use of the Carrel-Dakin method or some other form that will cleanse and tend to limit the infection.

Fat embolism is mentioned as a serious complication of fractures. E. C. ROBERTS.

Henderson M. S. Fractures Considered as Potential Deformities. *The South Minnesota Medical Association* 1919

In this article attention is drawn to the common types of deformities following fractures that come to an orthopedic clinic. They are generally speaking consequent to fractures in the region of joints. The treatment of any fracture should be based on an exact diagnosis substantiated by the radiograph. A radiograph taken subsequent to the reduction tells whether the reduction is adequate. The surgeon will be aided in his treatment if he bears in mind the type of deformity that is apt to follow the particular type of fracture he is dealing with and so direct his treatment as to avoid that deformity.

Ischæmic paralysis is too frequently seen and although not invariably is generally the result of carelessness in the application of tight splints and too often the disregard of the patient's agony and pain until too late. Non union is sometimes caused by meddlesome examinations to see if union is complete by poor reduction and by interposition of muscle fibers the last named being perhaps the most common. In the author's experience syphilis is a very infrequent cause. He has seen but one case that might have been due to syphilis.

Following a fracture in the region of the shoulder joint the common disability is lack of abduction and outward rotation. Treatment with the arm in abduction will guard against the deformity. In the region of the elbow joint lack of flexion is common and treatment should be carried out with the elbow in acute flexion. A Colles fracture may be followed by the dinner fork deformity with inability to firmly close the fingers. To guard against this the fracture must be correctly reduced. In the hip joint non union is common and is usually due to the fact that the injury was erroneously diagnosed as a sprain and no treatment was instituted. Treatment by the Whitman's abduction method or the Ruth Maxwell holds the fragments in position until union has occurred. Under proper conditions bone pegging is permissible. A supracondylar fracture or an epiphyseal separation interferes with the proper transmission of weight bearing through the joint surfaces and limits flexion and extension. In some

of these cases an open operation is the only way to control the fragments. Pott's fracture is commonly followed by a valgus deformity. This should be guarded against by proper reduction and avoiding too early weight bearing as the callus may give way. The shoe should be raised on the inner side and in heavy people an outside iron and inside strap should be added.

Leriche R. Primary Suture of the Soft Parts in Diaphyseal Fractures (De la suture primitive des parties molles dans les fractures diaphysaires). *Bull. et Mém. Soc. de chir. de Par.* 1918 XLV 1486

Leriche thinks that in order to judge the value of primary suture in fracture cases it is necessary to specify carefully both the anatomic and the etiologic type of the fracture. If all kinds are confounded in the same groups of statistics the multiplicity of benign cases will falsify the conclusions applied to the more severe cases.

In a recent series of 17 fractures of the femur which Leriche has followed up to the time of complete recovery he had 4 immediate primary sutures without any bone operation. These gave 4 successes. 6 successful deferred primary sutures without surgical clearance. 7 fractures not primarily sutured 5 of which after isolation recovered without suturing and recovered after secondary suture. In the 4 primary suture cases the fracture area did not communicate with the wound, an intact band of muscle intervening. The 6 cases in which a deferred primary suture was done were fractures in which the fracturing projectile did not penetrate but remained against the bone. In the cases of fractures not primarily sutured the projectile had penetrated the bone in every case.

Leriche thinks that it would be quite incorrect to say that 64 per cent of thigh fractures can be sutured primarily. Hence the necessity of strictly classifying the type of fracture and the results in each class and type.

Leriche thinks however that it may be fairly stated that at the present time in a non active period of fighting 95 to 98 per cent of fractures can be primarily sutured without the least risk and without bacterial examination also from 60 to 65 per cent of fracture with penetration of the projectile into the bone. W. A. BRENNAN.

Dowden J. W. The No Splint Treatment of Fractures about the Shoulder in the Humerus and the Elbow. *Edinb. M. J.* 1918 XVI 38

Dowden claims that as a result of his no splint treatment of fractures about the shoulder in the humerus and the elbow it is possible for a patient to return to work in six or eight weeks regardless of the nature of his occupation. There are thousands of men at the present time with useless joints of the elbow wrist and fingers due to long immobilization.

His treatment of fractures is mainly without splints unless application is found absolutely

nece ary For ten years he ha been treating fractu es in these regions ith ut splints and has ne er been disappo nted nor has he ever had a case of non un n or a sin le bad re ult

The patient is encouraged to move his fingers and do what he can ith them carefully to pron te and supinate flet and e ten l the forearm and gently try to move his oulder jo nt and arm but never to the tent of p oducing pain It i surp ng how rapidly impro ment occurs unde this plan and how soon the pat ent can put hi arm into a coat sleeve One patient f the autl r s wh fctured his lavicle n F bruary and as t d by this method on the t st prize fo putting th eight at the Un versity sport in June

All fractu es of the humerus a tre ted ith the arm in sling plu the applcati n of a p terior splint ith a l er p jecti n th uppe a m f r the b t fev night mu h lepend ng n th cha te of the patient The pli tpre ents th patient lyin on the rm and p sing restl s night nd obv ous di tortion the n t day In thr e r f ur days pas e m me t i of ge t as t nce lift ng the a m gently f m th s de back a d nd for ard a d bending at the lb a f r the swell g and pain w ll p m t

He trent fr ctu e f the ol cranion e actly sim la manne the gap i gn ed in l m m t i encouraged on the sam p nciples a the ther fracture In ooo he frst h wed u h c se in a m n who had well C lle f t re f both arm and in sp te f tr ouble m adema l mo ment ere very f r in four w k

He ha tr ted ma y fra tures f e r b th bon s of th fo rm in th am iv but h t t m a plnt h s to b pplied f r al lou i d r t rom th ten l y t p n t i

He h s t e i d r l pat nts ith f cr of both b ne f th leg by simply making th n t up in b l ith th legs hang g v th side In s l ca c th e ere nd painful lling nt o th re s ked d ly in un n nd n ne b ne g afti halt bec ed ut f on u n H h end o l t pply th m prncipl t the leg a to the uppe trem ty but a yct h n t been ablt f f ct a meth d

He h um u ph t g ph illu t t ng the m thod appld t th uppre t em ty

G W H C

Smiti S A The Di gno i and T r tment f Inju i s t the C ual Ligam nt P t J S g 98 6

The lit tu c n e n g n j e t th rucal lgan nt i nt but lu ng the va the nu b r f b d k e p la l ought the ju ti n f the ante r cru l lig ment nto pr m n t tce These l gment tend nat mucily fro the intere ndyl t n tch f the femu t t l n tie la rea on the uppe surfac of the tib and they form p t f the m chan mon wh h the tably of the k ee j nt dep nd The rucal ligments stand

a la ge amount of strain in any abnormal movements of the knee joint The anterior ligament s tight when the j t is extended becomes sl ck n em flexion an l tense hen the jo nt is fully fle ed The posterior ligament i tight in full fle ion Lack in sem fle n and tense in full extension E tension of the joint as ell as external rotati n and abduc ti n of the knee are all more or less de pendent on the act n f the crucial ligaments

The comm nest form of knee sp ain combine abduction of the knee ith e ternal rotati n f the tib a the k ee being in the semi flexed po ition The deep b k e f the internal lateral ligament attached to the internal semilunar cart lage become to n nd the cartilage either fractures o is displaced Should the abducti n of the knee continue the entire strain i b rne by the ante ior crucal ligament or the inte n l t ul rcle of the tibial sp ne becomes avulsed The se e ty of the lesion to the ante r crucal l gment depend on the strain to v hich the k ee is e p ed

The f llo ng types of les on may be observed

Due to d c trauma rupture or stretching of the cruc l ith bony n lvement avulsion of the tib l spine c mbined ith t rn or di placed internal emilunar ca til ge

Due to mech n cal cau e (indirect trauma) genu cur itum

3 Due to disease i flammation about the joints or Cha ot d sease general eddi tegrati n of all l gmentou structu connected with the j nt

In la sify g le i n f the crucial l game ts it is imp rtant to remember that tears are al ays due to re trauma but th t stretchings result from c nt u st a due to mechan cal caus s The te or crucal l gment i m reli ble to jury than the poste ior A st tched or torn anterior crucial l gment o b ned v th te r ng of the i ternal sem l n r c t l g e appe r to be a commoner m ju v than is supp ed

D gnosi of ucial injur e is made in old tanding knee j t inju e by (a) lcking of the joint (b) ock g r slpp ng of the jo nt combined th a feeling of secu ty

The gener l t ment f injuries of the crucial l gments should be conservative rather than perati e The nditi n should be tued by mean f th X ay and l ngthened mmob h at o th mass ge fa ad m etc applied a id cated

When the ny ries are of lon str nd ng perative m sures a indicated The follo ng operati ns l c been t ed in the eal er cases of the author

plecti n of t etched ante r cruc l l gme t h g i e taking up th sla k of the l ament by me s of n n ab orb l l ture repl cement of an anterior c ual l gment by t o l ops of i re one fi el th ough th e tern l conlyle of the femur and the other thr ough the nte nal tub ro ty of the t b a silk l am t substituti n acco d to the Lan te lon method G n rally th se m thod d d n t give sati fcti n

In the most recent cases the author has adopted the method lately introduced by Hey Groves of substituting a strip of fascia lata for the crucial ligament. This method is a great advance on all previous procedures and has proved very satisfactory where tried by the author. He has however thought it necessary to modify it by strengthening the internal lateral ligament.

The author's technique is described in detail. He makes a J shaped incision as for excision of the knee. The patella is divided vertically and the crucial ligament exposed and examined. A hole is bored by a one fourth inch drill through the internal surface of the external condyle at the site of the upper attachment of the anterior crucial ligament and emerges at the upper level of the suprapatellar pouch. The internal tuberosity of the tibia is next drilled beginning anterior to the insertion of the sartorius and emerging on the superior articular surface of the tibia just anterior to the internal tubercle of the tibial spine. A strip of fascia lata one and one half inches wide is now cut attached at its bottom and about nine to ten inches in length. A flexible probe is pushed through the tibial drill hole and passed through the femur and pulls the fascial strip with it. As much tension as is thought fit is applied to the new ligament and the tibia is forced backward on the femur as much as possible. The free end of the fascial strip is passed through a channel cut for it in the inner condyle pulled tight and is sutured to the periosteum around the tibial orifice. The fascia curls as it passes through the bone and makes a ligament about the size of a pencil. The operation is then completed and the wound drained. The limb is kept in a skeleton splint for two weeks in flexion.

Nine cases of crucial ligament injuries are described by the author. W A BRENNAN

Wentworth E T Demonstrable Luxation of Sacro Iliac Joints *1 n J Orthop Su* 1918 vii 443

The author believes that he has demonstrated two cases of definite luxation of the sacro iliac joint. One in a woman dated from the relaxation which occurred during the anaesthesia for a laparotomy three years previous the other occurred in a man who sustained an injury after being thrown from a horse. Both are able to walk about not without discomfort however. Neither has referred pains there is a dull ache in the region of the sacro iliac joint in the first Kernig's sign is absent in the second it is present. Forward bending causes no pain to the woman but is painful to the man backward bending is painful to both.

With the patient standing with his back to the examiner who stands with his hand on the ilia and the thumbs upon the upper posterior aspect of the sacro iliac joints the patient is asked to stand alternately on the left foot and then on the right raising the knee to the chest. As the right thigh passed the horizontal there is heard throughout the room a

sharp click accompanied by a definite sensation of motion under the right thumb of the observer and by pain to the patient.

The X ray examination revealed the sacrum tilted upward about three sixteenths of an inch in the woman but no change was visible in that of the man.

R B CORFIELD

Willems C Pseudarthroses Following War Wounds (*Pseudarthroses consecutives aux plaies de guerre*) *Arch de med et pharm mil* Par 1918 lxx 350

Willems thinks that osteosynthesis does not favor proliferation of bone tissue and that therefore it has few applications even in cases of simple pseudarthrosis with good coaptation.

The bone insert graft (Albee) ought to be utilized for pseudarthroses with loss of substance and even for simple pseudarthroses when a displacement must be corrected. Osteoperiostic grafts should be reserved for simple pseudarthroses without displacement.

The technique of the bone insert is complicated when the surgeon is not provided with the special Albee instruments and even with them it requires special dexterity. The osteoperiostic graft is much simpler in its application. Perfect asepsis and a complete excision of fibrous tissues in the vicinity of the fragments are necessary requisites to success.

W A BRENNAN

SURGERY OF THE BONES JOINTS ETC

Fenwick P C C A Method of Overcoming the Adherence of Tendons After Suturing *Brit M J* 1918 ii 542

Septic gunshot wounds of the hands and feet often involve tendons which may become adherent to surrounding structures. In a case where the extensor tendons of the hand were involved and a portion of the extensor communis digitorum blown away the infection was first cleared up and three months later a plastic operation done on the tendon.

A flap of the tendon of the extensor communis digitorum was turned down from above the annular ligament which was not interfered with. This flap was split into three parts and stitched with silk to the cut ends of the tendons of the three inner fingers. To prevent the newly constructed tendons becoming adherent they were wrapped with thick catgut each strand separately and up as high as the annular ligament. The hand was splinted for three days then movement begun. Two weeks later faradism was applied to the muscles of the forearm.

The patient acquired full flexion and extension of the fingers.

P W SWIFT

Leriche R Primary Treatment of Femur Fractures (*Tra tement primitif des fractures du fémur*) *Isyodim g* 1918 vi 489

Leriche says that the mortality of fracture wounds of the femur varies according to the time

laped after and distance from the place of injury. This may explain the difference in the treatment and results of the various methods of some of the surgeons and the position of the foot.

The gravity of the fracture of the tibia and fibula upon the concomitant joint is the most important factor in the treatment of the fracture. The primary treatment should be carried out at the time of the fracture as completely as possible.

At the end of the operation the patient should be moved to a position in which the foot is in a position of rest.

When the patient remains in the hospital after a short time of rest.

2. If there is a compound fracture of the femoral artery or the blood vessel.

3. If several fractures of the tibia and fibula exist.

4. The demand for the treatment of the fracture.

not call for a special treatment.

The conservative treatment of the fracture of the tibia and fibula is the most important factor in the treatment of the fracture.

of the wound. Treatment of the fracture of the tibia and fibula.

not only the free, but also the fixed, and of entry and exit, but also the fixed, and of the projection of the tibia and fibula.

Hemostatic treatment of the fracture of the tibia and fibula.

With regard to the treatment of the fracture of the tibia and fibula.

distinction between the type of fracture of the tibia and fibula.

In the fracture of the tibia and fibula.

the projection of the tibia and fibula.

the amputation of the tibia and fibula.

1. At first by the treatment of the fracture of the tibia and fibula.

some time from the end of the fracture of the tibia and fibula.

geographical fracture of the tibia and fibula.

must be made and the treatment of the fracture of the tibia and fibula.

out of the wound and the treatment of the fracture of the tibia and fibula.

3. Fracture of the tibia and fibula.

thickening of the bone. In the treatment of the fracture of the tibia and fibula.

(clearance) of the bone. In the treatment of the fracture of the tibia and fibula.

thickening of the bone. In the treatment of the fracture of the tibia and fibula.

The hole of the tibia and fibula.

potholes of the tibia and fibula.

tracheal anastomosis of the tibia and fibula.

tracheal anastomosis of the tibia and fibula.

generally. It is necessary in certain cases to perform the operation not earlier than a couple of weeks after the primary intervention.

In the author's first series of cases of severe femoral fracture treated at a distance of 40 kilometers from the battlefield, the mortality was 40 per cent. In the second series, where the distance was 100 kilometers, the mortality was 0 deaths. W. A. B. R.

Taerner, L. and J. J. L. Tr. Am. J. Surg. 1938. 19: 1-8. 399.

The authors report their experience with the surgical treatment of fractures of the tibia and fibula. The results of the treatment of the fractures of the tibia and fibula.

1. The results of the treatment of the fractures of the tibia and fibula.

2. The results of the treatment of the fractures of the tibia and fibula.

3. The results of the treatment of the fractures of the tibia and fibula.

4. The results of the treatment of the fractures of the tibia and fibula.

5. The results of the treatment of the fractures of the tibia and fibula.

6. The results of the treatment of the fractures of the tibia and fibula.

7. The results of the treatment of the fractures of the tibia and fibula.

8. The results of the treatment of the fractures of the tibia and fibula.

9. The results of the treatment of the fractures of the tibia and fibula.

10. The results of the treatment of the fractures of the tibia and fibula.

11. The results of the treatment of the fractures of the tibia and fibula.

12. The results of the treatment of the fractures of the tibia and fibula.

13. The results of the treatment of the fractures of the tibia and fibula.

14. The results of the treatment of the fractures of the tibia and fibula.

15. The results of the treatment of the fractures of the tibia and fibula.

16. The results of the treatment of the fractures of the tibia and fibula.

17. The results of the treatment of the fractures of the tibia and fibula.

18. The results of the treatment of the fractures of the tibia and fibula.

19. The results of the treatment of the fractures of the tibia and fibula.

20. The results of the treatment of the fractures of the tibia and fibula.

21. The results of the treatment of the fractures of the tibia and fibula.

22. The results of the treatment of the fractures of the tibia and fibula.

23. The results of the treatment of the fractures of the tibia and fibula.

24. The results of the treatment of the fractures of the tibia and fibula.

25. The results of the treatment of the fractures of the tibia and fibula.

To obviate these difficulties Bosch Arana has devised a special technique of his own which is divided into six stages. He first makes four longitudinal incisions equidistant from each other around the end of the old stump which in the case illustrated is a tibial stump. These incisions terminate about 3 cm. from the bottom of the stump and run from 8 to 15 cm. long according to the total length of the stump. The skin strips between these incisions are dissected subcutaneously so that four subcutaneous bridges or tunnels are formed. An extraperiosteal dissection of the bone is then made followed by sawing and complete resection of the bone end out of the stump by the bistoury. When the bone has been entirely removed all muscle parts which can not be utilized to form a plastic motor are resected out through the bridges and the cutaneous bridges are then sutured together by the edges over the remaining muscles to form a ring motor with a completely dermized eye.

The steps of the operation are fully illustrated by the author. He has obtained excellent results with this technique.

W. A. BRENNAN

ORTHOPEDICS IN GENERAL

Elmer W. G. *Surgical Technique in Orthopedic Surgery*. *Ann Surg Phila* 1918 LXVIII 646

In the first part of this paper the author describes the technique employed for general surgical operations in an ordinary operating room. He lays particular stress on the methods of sterilization commonly employed mentioning some of the weak links in the chain of surgical technique which may be capable of causing a complete breakdown in surgical asepsis and result in failure to secure primary healing of the operative wounds.

First he considers the gutta serena gloves. These gloves are generally sterilized in the autoclave for either ten or twenty minutes depending on whether they were used in a clean or septic case. Gutta serena is impervious to steam and when the gloves are folded wrapped in muslin and piled in bundles in the autoclave it is impossible for the steam to reach all parts of the glove. Air pockets may occur within the finger or thumbs and the permit only dry heat sterilization instead of moist heat for twenty minutes. While boiling water at 101° F. will destroy all organisms and their spores in five minutes it requires an exposure of one hour at a temperature of 350° to destroy germs by dry heat. Therefore the autoclave fall short of this by nearly 100° in temperature and forty minute in time.

To avoid all possibility of doubt as to the gloves being sterile the author insists that his gloves be washed with soap and water turning them inside out while doing so. They are then filled with water to remove the air and immersed under the surface of the boiling water and held down by a piece of wire screen so that they cannot float up to the top and be exposed to the air. They are boiled five minutes by the clock. When the water cools the nurse

wearing sterile gloves removes them dries them with a sterile towel powders them inside and out with sterile talcum powder and folds back the gauntlet. Into this she tucks loosely a small gauze pad covered with talcum powder which the surgeon uses for dusting his hands. The gloves are then placed without folding in a muslin cover and put into a large glass jar. Just before they are needed for operation the muslin packets are placed full length in the autoclave lying loosely in rows not packed in compact bundles and sterilized for twenty minutes. In this way the steam reaches every part of the glove.

Another object which may be the carrier of a deadly virus is the sand pillow. It should be sterilized in the same manner as the gloves. The same applies to the pad covering the operating table.

As to the instruments only the number required for each operation should be sterilized. This may be done by boiling for ten minutes in water to which a tablespoonful of carbonate of soda has been added. The knives are not boiled but are washed carefully and are sterilized for operation by immersion for twenty minutes in a 1/20 carbolic solution or 3 per cent formalin. They are removed by a sterile forceps to a tray of 85 per cent alcohol.

Silk is prepared by boiling for ten minutes in a 1/1000 bichloride solution and then for ten minutes in plain water. The tubes containing the catgut should be boiled with the instruments and then placed in a tray of 1/10 carbolic solution or 3 per cent formalin.

The second part of the article is an outline of the surgical technique employed in the Orthopedic Department of the University Hospital Philadelphia.

The patient is prepared for operation by the administration of a cathartic followed by a simple enema the day preceding the operation. The part to be operated upon is prepared by scrubbing for ten minutes with green soap and sterile water then washed with plain sterile water scrubbed with warm 1/2000 bichloride of mercury doused with sterile water and sponged with 85 per cent alcohol. The part is then covered with dry sterile gauze and bandaged.

The instruments used in the operation are sterilized as outlined in the first part of the operation.

A list of the instruments usually required in orthopedic operations is appended.

G. W. HOCHREIN

Merrill W. J. *Distortion of the Pelvis from Posture*. *Am J Orthop Surg* 1918 XVI 492

In women the habit of standing on one foot prevails by a greater percentage than in men. When the weight is borne on the right leg for instance as a rule the abductor muscles of that leg are relaxed the pelvis tilts to the left the left leg is bent and there is a left lumbar scoliosis with increased lordosis. The excursion of the pelvis to the left and in forward rotation is usually to the extreme limit of movement. There is a resulting increased pron-

laminal and lateral articulations are well adapted for operative fusion because of their accessibility and because they are rarely involved in the disease.

The spinous processes of the segment to be fused are exposed. Beginning at the upper end the periosteum and interspinous ligament are split. The periosteum is then separated from the spinous processes and laminae to the base of the transverse processes exposing the lateral articulations. The lateral articulations are opened and the periosteum and ligament are curetted from the adjacent edges.

Beginning again at the upper end a piece of bone is turned from each lamina from above downward resting on the lamina below. Each spinous process is then fractured so that its tip rests upon the bare bone below. The periosteum and ligament that have

been split and pushed to one side are now brought together by interrupted sutures. An immobilizing brace is applied. By this means a tube of periosteum encloses live healthy bone fragments lying in continuous contact. The area of fusion will depend upon the thoroughness and extent of the dissection. The number of vertebrae fused will depend upon the extent of the disease.

The patient is kept in bed for eight weeks and wears a brace for from six months to a year. The general hygienic and dietetic treatment of tuberculosis is also carried out.

There has been no operative mortality and practically no shock. One hundred and fifty seven or 74.7 per cent were cured. Twenty two were doubtful and thirty one died. J. R. BUCHBINDER

SURGERY OF THE NERVOUS SYSTEM

Soulttar H. S. and Twining E. W. Injuries of the Peripheral Nerves from the Surgical Standpoint. *Brit J Surg* 1918 vi 279

The authors report 148 cases with the methods and results of treatment. There were 61 cases treated by suture resulting in 7 complete recoveries, 32 prospects of recovery, 7 doubtful cases, failures and 13 unknown results. Treated by neurolysis 24 cases gave 7 complete recoveries, 16 prospects of recovery and 1 doubtful case. Treated by anastomosis 5 cases gave 1 complete recovery, 3 prospects of recovery and 1 failure. Of 58 cases not operated upon there were 24 complete recoveries, 13 prospects of recovery, 2 doubtful cases, 11 failures and 18 unknown results.

One lesson that has been impressed upon the authors is that success in nerve surgery is a matter of organization. The investigation of the cases is so complex the operations involve such unusual details of experience and technique and the after treatment is so tedious and varied that only by means of an extensive organization can they all be satisfactorily carried out. The highest operative skill is of no use in the face of incompetent physiotherapy while the most perfect physical treatment will not remedy the mistakes of a clumsy surgeon.

All nerve cases should be cared for in centers where they will have at their disposal the extensive material resources, the clinical experience and the trained patience without which their recovery is a matter of chance.

In the authors' special department a careful examination is made and recorded as soon as the patient's condition permits it to be made. This examination is repeated once a month and in the meantime he is under close daily observation. When he leaves the hospital attempt is made to keep in touch with the patient or his medical adviser and only in this way is it possible to keep the records upon which the man's treatment can be scientifically founded. Only in this way the forma-

tion of contractures can be prevented which may mean permanent and unnecessary disability and the psychological moment for operation be chosen. A chart shows the monthly examination of each patient. In a journal is kept an exact record of his progress sensory, motor and electrical. He is given a card on which are entered the details of his treatment for the coming month and each treatment that he receives is entered daily.

In operating the surgeon should follow a simple and precise routine. He should have as clear and accurate knowledge as is possible of the anatomy of the affected region and of the condition of the nerve. He should have a clear idea of what he means to do and he should do it in the simplest way.

The physical treatment of the case before and after examination should be based on a definite routine although it should be directed to the special requirements of the patient and should introduce all possible variety. In short the patient should feel that he is surrounded by a powerful organization skillfully directed toward his cure and it should be the aim of the surgeon to make the organization so perfect that a man may be supported through the tedium of many months by the knowledge that his cure is the inevitable result.

The authors give full details of the method of examination, sensory, trophic, etc. of the care of the limb, of the indications for operation as well as of the operative technique. In civil surgery nerves are frequently sutured in clean wounds a few hours after injury. In military surgery this does not occur and usually the peripheral portion of the nerve has passed through the complete process of Wallerian degeneration before suture is attempted. In the sensory fibers the process of recovery after complete degeneration will be the same whether the recovery occurs spontaneously or after resection and suture. On the motor side the first evidence of recovery observed is a shortening of the period of relaxation after galvanic

stimulation In the authors experience faral c re
sponse and voluntary power return almo t simul
taneously W A B N N

Fasano M Surgical Intervention in G nshot
Wounds of the N rvs (Sull t nto chir g c
n lle fe te d n vi da p tt l d gu ra) P l
l n R m 9 8 p t 1049

From his experience in the treatment of the v ar
injuries of nerves Fasano th nks that when there i

paralysis alone ithout pain it i debatable whether
or not to await cicatrization of the ound before
ope ating upon the nerve On the one hand there
is the gain of an asept c field but on the other the e
is muscular atrophy rig d ty and ankylo is to be
con idered When intense pain is present mmed ate
intervention ithout awaiting cicatrization is
ju tified

The author gives the clinical detail of some cases

W A BRENN

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS ULCERS ABSCESSSES ETC

Centanni E Atrophy of Tumo s Produced by
Means of Blastin Free Diet (L t fi d t m i
p r me o dell d t bi t ca) R f d
Napoli 9 8 xx 6 6

The author reviews the v ou attempts wh ch
ha e been made in the p a t fo produc g atrophy
of tumors wh ch he states ha e result d n failure
He then takes up the attempts at the alimentary
treatment of tumors Hi o n initial experiments
along these l nes sho d that if the food as simply
reduced in all its elements all the cell of the b dy
including the tum r cell suffered a d n thng
sp cal as gained n the struggle of n rmal cell
against the tumor The ideal method as to c n
centrate alimentation on certa n elements al ne to
starve the tumor of substances of hich it was most
greedy and which it most needed Such substances
v ere evidently those that fav red its p oliferation
The e substances h v e been va iously termed
au etics Wuchsstoffe or blastins hich latter
term the author uses

The authors first experiments th v tam ne
free foods ere t ken up in Amerca by Sweet
Cars n White and Sa on They used foods hich
without influencing the general health lack d some
elements necessary for normal gro th It as
clearly seen that the growth of a tumor could be
inh b ted o made to d appe r in mic under the
influence of su h d t

In hi o n further researche the author found
th t the principal sources of blastins ere the
vitamines the internal secretions and certain
nucleinic and phosphoric chemical preparations
In his experiments he endeavored to use foods v hich
were quite free from these The food v as denatured
by exposing it to a temperature of from 25 to 130
The general result s that the tumor being deprived
of its principal need while the normal cells are not
the struggle between the two i turned in fa or of the
no mal cells and the tumor cells cannot li e

The experiments carried out by the author con
cerned the ordinary grafted adenocarcinoma of
mice There were altogethe 92 series of 4 to 10
animals in each The results we e

1 With hyperal mentation by the usual food
100 pe cent f grafted cancer took and increased
so rapidly that it reached a si e greater than the
v hole body of the mou e (mo se weighed 18 g
the tumor 25 gr) The appear nce and rapid ty of
g o th of the tumor could be altered by varying
the m position and am unt of the diet

2 By giving preventive blastin free food for ten
days before gr ting the tum r either did not take
or after an initial attempt withered and disappeared

3 By gi ing blastin free food in the case of well
established tumors hich had not yet reached
maturity the gro th of the tumors was arre ted
and they v ere finally reabsorbed leaving n trace

4 In the case of large tumors alte a short
pe od the center of the tumor softens and shows
necrotic r t on

It v as found that large tumors we e st re
houses of blastins and that ulcerated tumors v ere
sources of intoxicati n In such cases theref re
before the atrophy g d et treatme t a large port on
of the mass f the tumor as resected The remain
ing portions were then found to become gradually
reabs rbed as the animals v ere fe d on the diet

6 The author fnds that mice hich ha e re
co e d from tumors under blastin free treatment
ha e remained quite free fr m recurrences

Centanni c ns ders h resca ches most mpo tant
in modern experimental v ork He thinks that the
treatment can be e t ned to human tumors and
that t should be ery favorable (1) becau e tumors
do n t each the same relati ely large volume in
men that they do in mice and () because men are
particularly sensitive to blastin free al mentatio
There is ho ever the point to be considered that in
the human subject the tumor a ses spont neously
and the conditions for its dis ppearance may be
different Centanni d es not con der that blasting
free diet v ould cause any particular di t rbance in
the human subject or at least n ne that could not
easily be remedied W A B E I N

Bowie W T The Localization of the Physiological
Effects of Radiation Within the C II J M d
R s a ch 1918 x 5

In some n estigati ns reported in pre ious pa
pers living cells (paramecium caudat m) er

exposed to ultraviolet radiations of two different wave lengths and the resulting functional disturbances observed. Although the radiations used were from the same general region of the spectrum and the difference in wave length was less than 0.1 microns the physiological effects produced were strikingly different.

A survey of the literature reveals the fact that rays from widely separated regions of the spectrum provided their ability to penetrate the organism is such that similar parts are radiated produce similar physiological effects regardless of the difference in wave strength. In other words it is the instability of the physiological mechanism rather than the wave length of the radiation used which determines the nature of the physiological effect produced.

If two kinds of radiation have a difference in penetrating power such that the effect of the one is strongly localized near the surface of incidence while the effects of the other extend deep into the organism obviously there will be a difference in the physiological effect produced. Information concerning the penetration of ultraviolet radiation into tissues is indicative of a sufficient difference in the penetrating power of the rays used in the experiments referred to above to account for the observed differences in physiological effects. It seems reasonable therefore to postulate that the differences are due to a difference in penetrating power rather than to any action specific for wave length. By selecting rays of proper penetrating power the place of action within the cell is localized. The basic principles of the method are applicable to the study of the action of rays in general and an extension of their use will it is believed open up new lines of biological investigation.

Bovie found that the localization of the place of action of radiation within the organism depends upon two principles: first selective absorption of rays and second hypersensitiveness to the influence of rays. The application of the principle of selective absorption will be made possible by determining the absorption of radiation by different kinds of tissue elements. The application of the principle of hypersensitiveness to the influence of rays will be made possible by careful physiological studies of organisms which have been radiated. In connection with the absorption of rays it must be pointed out that absorption alone cannot be used as a measure of physiological action because physiological action does not depend upon the amount of energy absorbed but upon the kind of processes initiated through the transformation of the absorbed energy.

Whether selective absorption will take place depends upon the kind of radiation used and the nature of the absorbing tissue. The laws of absorption of radiation have been discussed in a previous paper but for the sake of completeness they will be repeated here.

When both the tissues and radiation are homogeneous in character then according to Lambert's

law each layer of tissue of equal thickness absorbs an equal fraction of the radiation which traverses it. Hence as the thickness of the tissue increases in geometrical progression the radiation intensity decreases in geometrical progression.

Knowledge of the physiological effects of radiation is not sufficient to enable one to lay down fundamental principles concerning the hypersensitiveness of different kinds of protoplasm to the influence of rays. It is known that some kinds of protoplasm such for example as that composing the so called eye spot of the single celled organism euglena are extremely sensitive (as compared with other parts of the cell) to the influence of light rays. In this case the hypersensitive region is provided with a pigment which increases absorption. Whether it is the pigmented protoplasm itself or the protoplasm closely associated with it which is hypersensitive has not as yet been determined.

There is some evidence that certain parts of most cells the nucleus for example are more sensitive to the influence of rays than other parts. Again cells in a rapidly growing condition appear to be more sensitive to radiation than cells which are at rest. Evidence concerning these matters must be very carefully examined however before categorical statements of hypersensitiveness can be made because knowledge of the functions of the cell is limited and what may appear to be specific hypersensitiveness may be nothing more than an expression of the limitations of experimental methods. Disturbances of functions were observed only where the author knew where to look for them.

Organisms receiving short exposures to quartz rays differ from enucleated cell fragments in that the photo enucleation is only temporary and it seems reasonable to suppose that more careful study will show that with shorter exposures the enucleation is not complete and that certain nuclear functions may be only slightly or not at all interfered with.

Bovie concludes his experiments by saying these studies give a clearer notion of the nature of the action of rays. It seems apparent that the rays affect the protoplasm at the place where they are absorbed and that the observed physiological disturbances are the responses on the part of the organism to its protoplasm. GEORGE E. BEILBY

Crile G. W. The Value and Limitations of Laboratory Studies of Acidosis in Surgery. *Ann Surg Phila* 1918 LVIII 457

The author cites experiments to show the relationship between acute blood acidosis diminished reserve alkalinity and shock. In his study with Menten of the H ion concentration of the blood he found this to be increased during intense fear, rage, extreme exertion, inhalation anaesthesia, surgical shock, hæmorrhage, asphyxia, alcoholic intoxication, etc., but the H ion was not increased during narcosis by opium and its derivatives, sleep, protracted consciousness unbroken by sleep except near death, serious infection, exophthalmic goiter, etc.

The limitations of the value in study of reserve alkalinity and acid excretion were shown by unexpected variations in the clinic where acute infections, bad cancers and good and bad risks of all kinds were observed. Often desperate cases which died showed a reserve alkalinity as great as that of the observer.

The author therefore believes that the laboratory methods are of meager clinical value so far as the studies of H ion concentration, carbon dioxide tension, the reserve alkalinity of the blood and the acid excretion of urine are concerned. These methods furnish only the degree of failure of the corrective mechanism, giving no clue to the possible intracellular acidosis as the fundamental condition present in shock or exhaustion from any cause.

Duval P and Grigaut A. War Wound Intoxication Nitrogenous Disintegration of Traumatized Tissues. (*L'impact n'aplique pas de plaies de guerre la désintégration des tissus traumatiques*) *Bull. mém. S. de chir. de P.* 1918, liv. 15, 6.

Since 1918 Quénu has taught that shock is an intoxication due to absorption of products of albuminoids derived from injured tissues. The authors have undertaken a research into the validity of this theory and as a result they are in full accord with the theory that the toxic phenomena in primary shock directly originate from an intense and rapid nitrogenous disintegration of the traumatized tissues.

The contents of non-proteid nitrogenous substances vary from 3 to 3.1 gr. for 1000 gr. of muscle, while it is only 0.23 gr. for 1000 in plasma. The figures are constant for all mammals. The retention of part of its nitrogen by the muscle can only be the effect of some active process of the cellular membrane because the nitrogenous substances are quite dialysable and the nitrogenous contents of muscle and plasma would hence tend to unite.

Passage of nitrogenous substances into the blood only becomes operative when the muscle nitrogen passes above the figures of about 3.3 gr. which may be considered as the fixed constant for nitrogenous secretion of the muscle cell. A nitrogenous reserve is retained by the muscle but under the influence of traumatism part of this is released and passes abruptly into the blood. Two tablets given by the authors show that the nitrogenous contents of traumatized muscle is considerably less than that of healthy muscle, varying from 39 to 50 gr. per 1000 gr. of traumatized as against 3.47 to 3.68 gr. for healthy muscle.

One of the first effects of traumatism therefore is the inhibition of the cellular membrane which permits all the crystalloids to pass from the muscle into the blood. Fermentative and microbic processes facilitate. Normally the blood is poor in non-proteid nitrogenous substances, the figures being 0.23 gr. for the total blood and 0.48 gr. for the red corpuscles for each 1000 gr. of blood. In the wounded

increase of nitrogenous contents is the rule. It reaches its maximum generally about the second day. No matter what may be the complicating circumstances, infection, icterus, etc., the increase of non-proteid nitrogen of the blood remains limited in the minority of the wounded and only rarely exceeds double the normal.

But it is different in the case of the shocked. It is exceptional in such cases to find figures of nitrogenous content which are not very much higher than double the normal value of such substances. This increase involves both the cells and the plasma.

The general evolution of the curve showing nitrogenous substances in the blood of the shocked varies according to the tendency toward recovery or death. If the tendency is toward recovery, the total non-proteid nitrogen contents diminish gradually if the evolution is toward death, there is a constant increase. Although the condition parallels the nitrogenous retention in Bright's disease, there is this difference that in Bright's disease there is a retention of urea, while in the shocked it is a retention of residual nitrogen.

The presence in the organism of the wounded of an abnormal proportion of residual nitrogen which represents the total of the non-proteid nitrogenous substances having escaped urogenesis is the direct cause of the phenomena of intoxication, the measure of which it furnishes. Liver conditions are secondary and liver insufficiency is the result of the sudden afflux of the nitrogenous substances liberated by the traumatized tissues.

These facts clear up the pathogenesis of shock in the wounded. The degree of intoxication is a function of the extent of the tissue territory injured, i.e., of the abundance of nitrogenous reserves freed.

In the discussion Delbet stated that he was investigating the action of the liberated nitrogenous toxins on the central nervous system and made a short reference to some of the effects perceived.

W. A. BRENNAN

De Almeida A. O. and De Almeida M. O. The Nature of Surgical Shock and Henderson's Theory of Acapnia. *J. im. M. Ar.* 1918, km. 170.

For the purpose of verifying Henderson's experimental work and his conclusions on the relationship between acapnia and shock, the author carried out a set of animal experiments.

Excessive artificial respiration for four to five hours in an experimental animal was carried out. The animal did not show the slightest symptom of shock, and in those experiments where the thorax was not open was able immediately afterward to stand up.

In looking for the unknown factor that caused results to differ from those of Henderson, it was discovered that the average temperature and humidity of the air was higher than was the case in Henderson's experiments. This factor prevented any appreciable modification of the internal tem-

perature of the animal. Thus although acapnia was produced shock did not occur.

Upon simulating the atmospheric conditions of Henderson's experiments by producing sufficient internal cooling of the animal coma followed by death results. The authors feel that shock as observed by Henderson was nothing more nor less than this coma itself. The following conclusions are deduced:

1 Excessive and prolonged artificial respiration produces coma and death only when produced by a sufficiently low temperature and humidity.

2 If the temperature and humidity be raised respiration may be prolonged indefinitely without obtaining this result.

3 Acapnia therefore bears no relation to coma.

4 The coma that results from internal cooling as produced by Henderson is not shock.

5 Henderson could not obtain what he thought was a condition of shock with expired air because the latter contained sufficient moisture and was of a high enough temperature to prevent this internal cooling.

J R BUCHINDER

Tymms A S M Emergency Surgery *Med J Australia* 1918 11 449 466

Tymms reports three cases with their histories in which disease of the pancreas made immediate operation necessary. In the first of these cases the process was of the acute type hæmorrhage predominating and though an abscess formed later infection did not appear marked as evidenced by the condition of the gall bladder and ducts. The other two cases correspond to the subacute type. Presence of blood stained fluid in the abdomen demands according to the author a differential diagnosis of acute pancreatitis from perforation of the gall bladder perforated gastroduodenal ulcer acute gastritis appendicitis with perforation and intestinal obstruction.

The only cases met with in emergency operations upon the liver by the author were rupture from trauma. He reports three such cases seen by himself. He believes the risk of operating upon a shocked patient is great but it will be greater when hæmorrhage is well established. Laparotomy should be influenced as much if not more by the nature of the injuring force as by the clinical signs present.

In the spleen rupture from trauma occurs under the same conditions as that of the liver. It is however more often associated with injury to the left kidney. Usually it is injured by a crushing of the loins such as is produced by the wheel of a vehicle even when it does not pass over the body. Along with its pedicle it is liable to injury from blows and falls resembling in this respect the jejunum. Hæmorrhage is difficult to control on account of the mobility of the organ and its great vascularity and splenectomy is more frequently indicated than mere plugging or suture of the laceration. One case is reported in which splenectomy was found necessary.

In the case of the kidneys the author emphasizes

the care necessary in making a differential diagnosis. Thorough systematic examination in every case prior to operation should be made.

Conditions affecting the fallopian tubes for which operation may be necessary are chiefly salpingitis and tubal pregnancy. Tymms saw no cases of ruptured ectopic gestation but found that operations for salpingitis constituted 6 per cent of the total 3 per cent of all abdominal operations, and 78 per cent of the operations performed for all primary pelvic conditions. He divides the cases into the early and old cases of which three were of the former and eight of the latter. Tuberculous affection of the tubes was not encountered. In the case of the ovary the author reports operating upon one case of an ovarian cyst with a twisted pedicle and a case of metastatic ovaritis following mumps.

Conditions of the uterus that would be likely to come within the scope of immediate operation apart from an occasional abortion or infected uterus are acute changes occurring in tumors of the organ or complications arising from their presence in the pelvis.

E C ROBERTS

SERA VACCINES AND FERMENTS

Duval P and Vaucher E First Results of Systematic Trials of Antigangrenous Preventive Serotherapy (Premiers résultats des essais systématiques de sérothérapie préventive antigangreneuse) *Bull et mém Soc de chir de Par* 1918 liv 1535

The antigangrenous sera employed by the authors were obtained from the Pasteur Institute and were as follows: serum antiperfringens, serum anti-œdematous, serum antivibrion septique.

As a preventive 449 wounded men (principally limb wounds) were injected the dosage varying from 20 to 30 ccm of the antiperfringens serum and 10 to 20 ccm of the others. The higher doses were given when the interval elapsed since injury was longer or when an important vessel was found injured in the course of operative treatment. Fifty five of these patients died within the first twenty four hours owing to the severity of their injuries. 281 have been followed and among these were 18 cases of gaseous gangrene 10 of which resulted in death. The percentage of death from gangrene thus established (4.7 per cent) in the case of severe wounds is less than the usual percentage i.e. about 16 per cent.

The authors draw attention to the fact that intramuscular should be associated with intravenous injections especially in cases in which the larger doses are found necessary.

Eleven of the cases which developed gangrene after preventive injections of serum showed an important arterial lesion and in the greater number no intramuscular injections had been made in the vicinity of the lesion. The later results obtained show the necessity of making these local injections and repeating them every two or three days when an arterial lesion exists.

The authors bacteriological study of cases of gaseous gangrene in patients having received preventive treatment is not yet complete but in cases they are able to say that the gangrene was due to microbes other than those against which they had attempted to immunize the organism.

In 77 cases in which curative antgangrenous serotherapy was tried the authors have had 6 deaths 8 amputations and 53 recoveries without amputation.

The conclusions drawn from the author study are as follows:

1. Preventive serotherapy of gaseous gangrene by antipeptinase, antivenin, and antitoxin sera is an absolutely justifiable method which ought to be generally adopted.

The proportion of gaseous gangrene cases to have been clearly eliminated would have received preventive injections 4 per cent in the severely wounded particularly exposed gangrene and 15 to 8 per cent in non exposed.

3. If the preventive injections can be made in the advanced postoperative period it may be hoped that the percentage of fatality will be much reduced.

4. The doses and method of injections practiced by the author seem to give the best results.

5. Many factors can be explained by the fact that the dosage of injections is insufficient in intramuscular injections in the affected region.

6. Serotherapy can only be an aid to the surgical operation which always necessary to clear the operative field and to remove the surgical treatment of the disease.

Serotherapy has a local effect. In the case of gangrene it is a complement of the treatment to which the wounded man is subjected.

W. A. B.

Marquis E. and Otter. Antgangrenous Serotherapy by the Injection of Antibellonensis and Antibrion Septic Sera (Léclercq, a. t. g. parles, j. d. m. t. b. l. t. a. t. b. o. n. p. t. q.) B. l. t. m. t. m. S. d. l. d. Pa. 1918, li. 5.

As a preventive against gangrene the authors treated cases of multiple wounds with very extensive destruction of the muscle by injecting 20 ccm each of the antibellonensis and antibrion serum into the muscles between operations and every 24 hours after injury. If the operation is later than the 40 ccm of each serum were injected. Only one injection was made. No case of gangrene developed.

In 8 clinically infected wounds the dose of each serum varied from 40 to 60 ccm and was repeated after twelve hours. No case developed gangrene.

In a few cases with vascular lesions the treatment was similar. Although gangrene is frequent when the large trunk vessels are injured 3 of 4 such patients did not develop gangrene.

As a curative treatment in 10 cases with evident gaseous gangrene a first intravenous injection of 60 ccm of antibellonensis and 20 ccm of antibrion serum were injected. The dose was repeated six hours later and where there was an evident improvement again repeated after twenty-four hours. After this a daily injection of 20 ccm of each serum was made. Of the 10 cases 2 died and 8 recovered. It should be stated that in the two failures the second dose had not been administered until twenty-four hours after the first dose.

The authors draw these conclusions:

1. Preventive serotherapy by antibellonensis and antibrion serum appears to be of real efficacy except in wounds of the larger vessels.

2. Curative serotherapy though less constant in its results nevertheless assures recovery in the great majority of cases. But it is only an aid to the necessary surgery—large excisions or amputations as may be indicated.

W. A. BRE.

BLOOD

Riel, C. B. d. n. P. and Sant G. ons. F. Effects of Intravenous Injection of Artificial Salt in Hemorrhagic Animal (Eff. t. d. s. j. t. h. l. num. h. m. r. r. g. s.) P. e. m. d. I. 9. 8. 1. 5. 8.

In preliminary tests the effects of several injections in hemorrhagic animals the authors investigated the total quantity of blood in an animal the quantity lost during a hemorrhage and the quantity remaining. They found that the total quantity of blood in a healthy animal is not only according to the weight but also according to the surface. The mass of the blood about one-thirtieth the total mass in dogs of kilograms and about one-thirtieth in dogs above 30 kilo rams in weight. The amount of hemorrhage which determines a fatal result found from several experiments to be that corresponding to 2 per cent of the red corpuscles or 3 per cent of the total blood being the residual quantity left in the animal.

The authors next studied the effects of injections following hemorrhage. The sera used were: pure saline, Locke's Ringer's solution, milk, and horse serum. All the experiments were made in dogs.

The results show that when a dog after successful bleeding has no more than 1 per cent of his red corpuscles remaining intravenous injections of different sera can prolong its life and that the hemorrhage may even continue until his red corpuscles fall to 5 or even at times 3 per cent.

Of all the sera experimented with the authors have found the most constantly favorable results from a salt sugar serum containing NaCl 7 per cent, lactose or glucose 5 per cent. Sodium chloride alone does not maintain the mass of the blood sufficiently.

Locke's serum has been constantly found to be toxic the authors think its toxicity is due to the sodium bicarbonate because the toxicity is no longer found when this substance is omitted and other sera become toxic when it is added.

Like sugar gum may be associated with sodium chloride. Very concentrated gum sera admirably sustain the blood mass and raise the pressure but they are toxic in strong doses.

A small dose (0.2-1.000) of chloride of calcium is not inconvenient and has a favorable action. Strong doses (2-1.000) are clearly toxic.

This refers to the immediate or temporary effects observed. For definite prolonged survival the authors carried out a series of thirty experiments. In these they similarly found that the sugar salt serum gave the best and least toxic results. The experimental results showed that while the maintenance of heart action and nerve centers is possible with a loss of 95 per cent of the blood yet they never have been able to obtain complete recovery after hemorrhages exceeding 0 to 75 per 1.000. After a temporary improvement the animal dies within a period varying from a few to twenty-four hours showing failure of the nervous system, profuse diarrhoea, rectal tenesmus, etc.

To find whether the nervous system was affected in such cases beyond power of recovery, the authors made a direct transfusion of blood in an animal reduced to extreme collapse. After a few minutes the animal was completely revived. Complete revival is therefore possible but only transfusion can effect it. Artificial sera are incapable of doing this.

Blood transfusions made from thirty-six to seventy-two hours after artificial serum infections have generally had unfavorable results.

While a serum therefore is capable of maintaining the action of the heart and the respiratory centers for some hours, it does not assure a definite survival after severe hemorrhage. In such circumstances blood transfusions alone will save and preserve life.

W. A. BRYAN

Hartman, F. W. New Methods for Blood Transfusion and Serum Therapy. *J. A. M. A.* 135: 981-168.

In the first part of his paper the author describes a one-man apparatus for the transfusion of blood by the citrate method. Briefly this consists of a glass fruit jar in which is suspended a four-ounce bottle by forcing it through a hole in the rubber cork of the fruit jar. The bottle contains the citrate solution. The fruit jar is a closed chamber and negative or positive tension may be created by means of a reversible pump.

A No. 1, platinum needle is used and to prevent clotting the citrate is fused with the blood as it leaves the needle. The rate of citration is controlled by a bulb and dropper arrangement in the citrate tube regulated by means of a clamp. When the blood is collected the needle is changed the pump reversed and the blood injected.

The author used the same apparatus for obtaining blood serum for therapeutic purposes during the recent influenza epidemic. The blood was citrated and allowed to sediment. The advantages of the method are that it does away with the large centrifuges required, a small amount of apparatus is needed, little handling of the blood is necessary, and the yield of plasma is larger than is obtained from the centrifuge method.

For the selection of donors a modification of Lee's method is used. The citrated blood is sedimented and the supernatant plasma drawn off, evaporated to dryness and dissolved in a minimum amount of normal salt solution. Filter paper is saturated with the mixture, dried and then sealed in oiled paper envelopes. The concentration of the serum on the filter paper is such as to cause agglutination visible to the naked eye. No glassware or solutions are necessary for the test.

J. R. BUCHRINDER

Govaerts, P., Finney, J. M. T., and Tuffier, T. Symposium on Blood Transfusion. *Arch. de méd. et pharm. mil.* Par. 1918, 143, 145, 158.

The following reports on blood transfusion in war surgery were presented to the Fourth International Surgical Congress held at Val de Grâce, France, in March 1918.

Govaerts finds that the indications for transfusion are limited as follows:

1. In the hours immediately following injury to (a) traumatic shock, (b) superacute infection, and (c) hemorrhage.

In the course of treatment to (1) posthemorrhagic and secondary anemia, (b) infections.

The circulatory asthenia in which men arrive in the few hours after wounding, favored by fatigue, cold exposure, etc., and accentuated by the traumatism is generally designated by the term shock, but there are three fundamental factors found in these cases: hemorrhage, superacute infection, and the traumatic element which is represented by the term traumatic shock. The latter factor is not necessarily accompanied by hemorrhage. Experimentally any one of the three factors will produce a fall in the blood pressure.

The diagnosis of severe hemorrhage is based on three elements: valuation of the quantity of the blood, arterial pressure, and posthemorrhagic anemia. The first is not practicable in the severely wounded, the second may also be due to other conditions than hemorrhage, the third is a surer basis within limitations.

Govaert's experience teaches him that in the case of limb wounds it can be determined within the first few hours after injury if the resulting hemorrhage endangers the man's life. If in the venous blood the number of red corpuscles is clearly lowered if it does not exceed 4,000,000 in the first six hours the prognosis is almost certainly fatal. The injection of serum in such cases is useless and a blood transfusion is formally indicated.

Practice has shown the following to indicate an extremely severe hemorrhage which calls for immediate transfusion less than 4 500 000 red corpuscles in the first three hours less than 4 000 000 red corpuscles in the first eight hours less than 3 500 000 red corpuscles in the first twelve hours. These figures apply to the usual conditions of young soldiers.

In cases of thoracic and abdominal wounds transfusion seems logical but in abdominal wounds the demarcations between the effects of superacute infection and hemorrhage are not clear and it would appear best to transfuse such cases until more definite indications are obtainable.

If in the early hours following injury the state of collapse is the consequence alone of a superacute infection gaseous gangrene for example transfusion is not indicated.

In pure traumatic shock the results of blood transfusions are not definite and under the circumstances the practice may be considered as calling for further investigation.

Posthemorrhagic anemia of itself does not constitute an indication for transfusion provided the general and circulatory conditions are satisfactory because it is ordinarily well borne even if severe. But posthemorrhagic anemia is often accompanied by complications. The cause may be reason for a transfusion (1) if an infection exists which accentuates the anemia (2) if there is a severe secondary hemorrhage (3) if there is no corpuscle regeneration after ten or fifteen hours. Thus in the case of traumatic secondary hemorrhage chronic hemolyzing infections and the failure of corpuscle regeneration constitute indications for blood transfusion.

Goertel's technique approximates the syringe method of Lindemann. It permits transfusion of 500 ccm in ten to fifteen minutes. No accidents have been reported from its use on the Belgian war fronts. The usual precautions regarding donor etc. are observed. The syringe method appears to be the best for avoiding coagulation and dilatation of the right heart.

With regard to results, cases of hemorrhage not complicated by infection gave complete successes with ultimate recovery. Infection is the danger most to be feared after transfusion and is the reason why rapid and radical operation is needed.

In cases of traumatic shock with pronounced gaseous gangrene blood transfusions were ineffective. In secondary hemorrhage its effect here tried was decisively satisfactory.

Finney states that the use of citrated blood for transfusion has generally been adopted by the American army. He describes the technique in detail. Donors are classed in four groups according to the agglutinating reaction of the serum and corpuscles as described by Moss.

The technique for determining the class of a donor fully described as well as the other qualities which donors must show.

At the front indications for blood transfusion are given by acute anemia due to hemorrhage.

The differentiation of shock without hemorrhage is often very difficult but transfusion is always indicated in cases of shock complicated by acute anemia.

The complete equipment for practicing blood transfusions is described.

Finney thinks that a special member of the hospital ought to be assigned to the superintendence of transfusion. His duties would be (a) to provide and classify donors and receptors (b) to be consulted by the personnel in all matters regarding transfusion and to personally superintend transfusion (c) to keep records of all transfusions on cases and to tabulate results (d) to act as a clinical and laboratory instructor and to perform such other duties as may be allotted by the surgeon in chief.

Tuffer reviews the circumstances which have changed the opinions of surgeons in regard to blood transfusions since the beginning of the war. In brief these are the substitution of the indirect for the direct method including the use of citrated blood and the simplification of technique. Blood is not appreciably modified by the addition of citrate and its introduction into the receptor is generally harmless. Although a few coagulation accidents have been reported these can be traced to faulty technique and are therefore avoidable.

In making the transfusion it is absolutely necessary to observe all the rules of vascular surgery. Although alterations in the blood do not show under the form of coagulation yet there are numerous microscopic alterations capable of causing accidents. In this law is not observed, e.g., that the wall of the tube in contact with the endothelium of the vessels be absolutely smooth at all points.

The quantity of blood transfused generally about 500 ccm is an arbitrary quantity and more exactitude on this point is needed. This might be obtained from the study of many cases. From 500 ccm to 1 liter about the quantity of blood usually lost in severe anemic cases arriving at the ambulance.

Tuffer knows of no case in which a transfusion has remedied the effects of pure traumatic shock.

In multiple wound cases transfusions have given much success where the principal indication was hemorrhage and shock secondary to it. Failures are registered where the shock was considerable and the hemorrhage little or nothing.

Published reports give about 67 per cent of success for transfusion, 40 per cent definite recovery and 100 per cent with varying degrees of survival.

The indications and results are shown in the following table: severe hemorrhage 77 per cent success, hemorrhage and shock 63.3 per cent success, pure shock, unsuccessful infections 54.5 per cent success.

In the discussion of the papers the following points were brought out:

Transfusion ought to be limited to shock caused by hemorrhage

There is practically very little risk of coagulation by using syringes

When a repeated transfusion is called for 50 per cent of the first amount suffices

Results with old preserved blood (up to twenty six days) are as good as with recently-drawn blood

At the advanced posts where transfusion is mostly called for the use of preserved blood is best even if it should not have all the physiological properties of fresh blood

No matter what method has been employed transfusion is followed by hæmolytic if there has been agglutination

W A BRENNAN

BLOOD AND LYMPH VESSELS

Goyanes J Catheterization of Arteries and Veins
(Sobre el cateterismo de las arterias y de las venas)
S glo méd Madrid 1918 lxxv 893

The experimental study of catheterization of arteries and veins the author states was begun by Bleichroeder and Unger in 1912 They used ordinary urethral catheters marked off according to the length The method has been used by surgeons in the treatment of vascular thrombi in amputations for gangrene to aspirate arteries and veins Such a catheter may be introduced laterally into a large vessel or through a collateral branch vessel When the direction of ingress of the catheter is centripetal the valves of veins do not offer any opposition and the experiment has been carried out in human subjects without any unfavorable results

The primary objection to this i.e. the possible production of thrombosis owing to the presence of a foreign body within the vessel lumen does not bear weight since it is well known that thrombosis does not occur from this cause

The method opens up new vistas of investigation in the clinical field as well as opportunity for experimental study Experimentally the pressure in deeply situated vessels can be studied also certain metabolic problems

Among the various clinical applications of catheterization the author refers to three (1) direct introduction of medicaments into vessels in order to effect therapeutic action upon determinate focal lesions (2) for direct vascular anesthesia and (3) for arterial obturation especially of the large arteries in order to obtain operative ischæmia The author a few years ago published an article on chemotherapy by the arterial route in the treatment of articular tuberculosis He has recently employed it in a case of very severe puerperal infection introducing collargol by a catheter into a collateral of the femoral artery in Scarpa's triangle

The most important application of catheterization is however according to the author the obtaining of ischæmia during important operations and obviating obliteration by compression In

interilio abdominal disarticulation ligatures do not prevent hemorrhage from the gluteal ischiatic and pedal arteries aortal compression is not convenient There is thus a field for catheterization

In a clinical case which the author describes he tried this method after previous animal experiments The case was one of enormous osteosarcoma in the right lower limb and the method used to avoid hemorrhage was as follows The catheter armed with a condom at its point was introduced into the femoral artery At its external end was a metallic piece by which it was connected with a syringe The catheter was pushed in until it reached the aorta which could be determined by the graduated divisions marked on it Then through the syringe the condom at the upper extremity was inflated with salt solution through the syringe This exercised strong pressure and all pulsation in the left limb ceased This method of conducting the operation bloodlessly was shown to be quite possible and it was carried out without trouble Unfortunately the patient's condition was such that he could not withstand the operation and he died ten hours later

W A BRENNAN

Giuseppe M Popliteal Arteriovenous Aneurism
Radical Surgical Treatment (Aneurisma arteriovenoso del poplite contributo chirurgico alla cura radicale) *Riforma med Napoli 1918 xxxiv 631*

Giuseppe treated a popliteal arteriovenous aneurism in a soldier by quadruple ligature and extirpation of the sac and obtained a perfect recovery He sketches the recent history of the surgical treatment of aneurisms and thinks that surgeons have only resorted to extirpation when it was impossible to re-establish the permeability of the vessels by suture

Statistics show that extirpation has usually been followed by good results while suture and indirect methods are frequently followed by disaster

Delbet and Mocquot up to 1889 found that aneurisms treated other than by extirpation of the sac gave 22 per cent recovery 45.4 per cent recurrence 45 per cent gangrene and 12 per cent secondary hæmorrhage More recently Monod and Vanverts in 18 collected cases which had been treated by similar methods found 38.8 per cent recoveries 11 per cent recurrence and 27 per cent gangrene

Since surgeons have followed the indications of radically treating aneurisms like any common tumor the method of extirpation has obtained its proper place and only in special circumstances is suture indicated

W A BRENNAN

POISONS

Quarella B and Venturini G Researches on Pus Pyoculture and Tryptic Reaction (Ricerche sul pus piocultura e reazione triptica studio clinico e ricerche di laboratorio) *Gior d r Accad di med Torino 1918 lxxxi 64*

The authors were appointed by the Italian Government to make a special study of the treat

ment of war wounds they give the report of their findings based on a review of the literature and their own investigation. Pyoculture they consider to have scarcely enough value to rank as a guide to the surgeon with regard to the time of operation.

While a negative pyoculture generally indicates a benign prognosis the inverse is not always true that a positive culture signifies a prognosis and indicates surgical operation. The authors adopt Flessinger's dictum that the method can give interesting results but that the mathematical equation must be accepted with some distrust.

The results of a series of pyocultures strengthen the clinical examination when they are in accord but can never be substituted for it and can never have as Delbet claims a superior value.

Pyoculture can give some important information of a secondary nature. It gives better evidence of the microorganisms of a wound and indicates the principal infecting agent which is of value in connection with vaccines and to serve as a comparative criterion of the importance and of the particular methods of treatment of infected wounds.

With regard to Delbet's further claim that the case of multiple wound pyoculture holds his lesion really exposes the patient to the most dangerous the author thinks that pyoculture can only do this when its results are not influenced by the bad general condition of the patient.

Delbet claims that pyoculture furnished a new method of giving definite evidence of the extent of a wound and was consequently a guide to the relative therapeutic indications.

While pyoculture is founded on the presence of immunity of an organism by the bactericidal qualities of its leucocytes and plasma to form the evidence collected by the author it has not the practical importance which Delbet and his pupils attribute to it. Its indications have only relative value. W A B

Floravanti L. Etiology of the Gaseous and Non-Gaseous Gangrenous Infections of War Wounds (Contributions to the study of the pathogenesis of gas and non-gaseous gangrene). *Chirurgia* 1918, 33.

Floravanti says that there is a pathological and clinical and etiological distinction between the gaseous and non-gaseous putrid infection of war wounds. The gaseous infections are of anaerobic origin the non-gaseous are aerobic.

An etiologic distinction between the different gaseous putrid infections is not possible because in the initial stages all show identical gas gangrene alterations in the tissues although varying in gravity and extent according to the agent.

Some gangrenous infections which may be termed pseudo-gaseous may be distinguished from the true gaseous infections in which the production of gas is primary and directly in accordance with the activity of the anaerobic microbes. In some pseudo-type the production of gas is not necessarily a

direct consequence of the infection but is the product of the decomposing action of microbes. Gas gangrene is the product of strictly anaerobic germs most frequently the septic vibrios and bacillus perfringens bacillus proteus bacillus coli etc. The etiologic importance of these first two microbes has been established from biological researches and the results of subcutaneous inoculations and cultures in animals.

The bacillus proteus is a constant agent of non-gaseous gangrenous infections. The virulence of this microbe has been established by biological researches. The association of the bacillus coli bacillus subtilis etc. has a greater clinical than pathological importance. The character and especially the evolution of the non-gaseous gangrenous infections may be aggravated by the streptococcus which owing to its greater virulence may cause an extraordinarily rapid and severe development of the infection.

The agglutinating action of the blood serum of the wounded is constantly negative for all infective germs in gaseous and non-gaseous gangrenous infections. This may be due to the difficult absorption of the bodies by the product of glutinins by the altered tissues of the gangrenous wounds.

Positive agglutinating reactions of the blood serum on microbes isolated from the purulent secretions of wound no longer gangrenous and in process of repair take place only by the absorption of the bodies germinated by the wounded tissue.

The author's conclusions are based on a large number of cases observed in the Italian military hospital the clinical details of which he gives adduced. W A B

SURGICAL DIAGNOSIS PATHOLOGY AND THERAPEUTICS

Foote W T. Surgical Diagnosis. Medical Practice 98, 479.

In this paper Foote discusses the various phases of surgical diagnosis in an endeavor to determine the best qualified in each instance to recognize such pathology and having recognized it whether further diagnostic effort is essential.

The term diagnosis should be broad enough to include not only a recognition of the lesion itself but also the effects of such lesion. For example in fractured skull the examination of the eye ground will indicate whether or not intracranial pressure is increasing and whether or not to operate.

Makes in diagnosis are more frequent in chronic conditions than in acute ones. The author illustrates this point by citing a case of flatulent dyspepsia in which the distress came on immediately and soon after eating. There was no tenderness over the epigastrium nor any history of attacks and the symptomatic ligament was suggestive of ulcer. The flatulent dyspepsia was of the type encountered in gall bladder disease and although there had been no history of gall bladder distention the surgeon

considered the probability of cholecystitis. The internist on the other hand made a diagnosis of functional gastric disorder which proved to be correct and the case subsequently improved under dietetic measures.

The author calls attention to the increase in diagnostic ability gained by the internist from watching the operations and thinks that the internist should spend more time in the operating room.

The surgical significance of pain is predominant and therefore prone to over accentuation. Its reflex and referred nature is recognized but may be misinterpreted and lead to erroneous diagnosis if relied upon exclusively. Fowler quotes Elsberg's report of several cases operated upon for appendicitis or ovaritis without relief in which the lesion was a tumor of the cord pressing upon the nerve roots.

He lays stress on the danger of doing pelvic operations in cases where pain is the principal symptom because the degree of severity is so frequently over estimated by the patient.

The only way to avoid errors in diagnosis in doubtful cases is to have the co operation of the neurologist, the internist, the physiologist, the pathologist, the roentgenologist and the surgeon. In other words group diagnosis is the remedy for minimizing diagnostic errors. Unfortunately this is not always possible because an extremely large class of patients are neither rich enough nor poor enough to enjoy the full benefits of such a plan. Birch has suggested a solution of this by establishing a diagnostic clinic in which individual examinations are made by staff specialists with subsequent consultation of all examiners including the family doctor who referred the patient for a moderate fee.

In a hospital service each ward case should receive a routine examination some time during his hospital stay from each attending staff specialist. It is unscientific and unfair both to the patient and to the surgeon to charge the latter with the sole responsibility for the diagnosis and treatment of some surgical lesion which may be only one of several factors contributing to the patient's ill health. On the other hand the surgeon cannot shift the responsibility for undertaking a surgical procedure to the shoulders of a colleague. The recent evolution of specialization with the consequent refinement of diagnostic methods has relegated the diagnostic activities of the surgeon to a position of secondary importance but it has not eliminated him from the scheme of diagnostic team work. G W HOCHREIN

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Loeb L. An Analysis of the Behavior of Organs After Transplantation in the Rat and of the Power of Resistance of the Constituents of the Various Organs. *J Med Research* 1918 LVII 189

In a preceding paper Loeb has already considered syngenesioplasmic transplantation of tissues in the

rat and the result of the transplantation as depending upon the relationship between donor and host. He used this method as a means of inquiry into the character of the individuality differential and the mode of inheritance of the latter. Subsequently he analyzed the factors which lead to the ultimate destruction of tissues after syngenesiotransplantation in the guinea pig.

In the author's studies in the rat he made use of the simultaneous transplantation of a number of different tissues in the same host. This offered an opportunity to study more closely the general factors which determine the life of various grafted tissues and the behavior of the various tissue constituents after transplantation. In this paper he reports connectedly upon the transplantation of the different organs in the rat and on the basis of these observations draws some general conclusions.

His experiments were made on the skin, the ovary, uterus, kidney, spleen, liver, testicle, fat tissue and lymphocytes.

From the above experiments the author made the following general conclusions:

Outer and inner factors determine the fate of the transplanted tissue. The outer factors consist of conditions in the environment especially the character of the host tissue, age, pregnancy and the presence of immune substances of this kind. The inner factors may be as investigations show again divided into (a) those depending upon the degree of differentiation of tissues and the sensitivity of the tissues caused by the complexity of structure and (b) those depending only in an indirect manner upon the structure of the tissue. The fate of the transplanted skin is to a great extent determined by the second kind of factor. Thus it was found that sooner or later transplanted skin is liable to perish notwithstanding the fact that epidermis is not a very highly differentiated and sensitive tissue because under certain conditions the connective tissue in consequence of more or less accidental factors is made to invade the cyst and in the ensuing struggle between tissues the connective tissue proves to be the stronger one. It is possible that occasionally the pressure of the keratin which fills the epidermal cyst may contribute to the destruction of the skin.

Variations are found in the state of preservation after homotransplantation in different individuals. Occasionally pieces behave after homotransplantation in a way which is characteristic of syngenesiotransplantation. At present the possibility must be admitted that in such cases the donor and host had after all been related to each other so that in reality it was not a homotransplantation but a more distant syngenesiotransplantation. There exists however the possibility that in certain rare cases animals not related may possess individuality differentials which are similar to each other. The individuality differential is the factor which most frequently determines the success or lack of success in the transplantation and the intensity of the lymphocytic reaction.

There exists within the same organ a gradation of different constituents according to their resistance to the injury of the act of transplantation as such and to the injurious influence of syngenesia and homotoxins. On the whole the latter agencies do not seem to act in a manner very different from the effect of other injurious influence like X-ray starvation, ovulation and interference with the circulation. Thus he found that during ovulation in the guinea pig ovary all but the smallest follicles perish. These are the most resistant. It is the same in cases of underfeeding. Similarly after transplantation on the small follicles are most resistant.

It has previously been observed by Ribbert and others that after transplantation of gland the excretory ducts are more resistant than the functioning gland cells. Investigations show that through comparative auto syngenesia and homotransplantation of different organs into the same individual it is possible to establish a quantitative gradation in the resistance of different structures.

The megakaryocytes of the spleen and liver cells survive in slightly more than one third of those cases in which living spleen tissue or bile ducts are found preserved. In a similar percentage of cases the small follicles develop to medium or large size in the transplanted rat ovary. Of a similar order is presumably the figure for the preservation of the myxoid or predeciduomatous connective tissue of the uterus although he cannot in the latter case present any definite figures. All those tissues are preserved only in such cases in which also the more resistant tissues of the corresponding organs are in a good condition and perhaps proliferating. Small follicles of the ovary, bile ducts in the transplanted liver and endothelia and blood cells of the spleen are in these cases preserved in approximately one half or slightly more of all animals used. The percentage of resistance of all the tissues seems to be of a similar order. The simple glandular ducts as found in the testicle, ovary, kidney are most resistant; the more so the more they approach the epidermis and assume the character of the latter.

We see then that on the whole the simpler structures survive after transplantation. The transplantation represents in some respects a struggle for existence between tissues and this struggle leads to a selection of the more resistant tissues. This selective action is mainly responsible for the ultimate structure of transplants.

In other cases a similar simplification of structure in the transplants may be produced through a transformation of a complex structure into a simpler one. This seems to take place in the course of the transplantation of certain tumors; this was observed in the case of the transplantation of an adenocarcinoma of a waltz mouse. In this case the simplification seems to go hand in hand with an increase in proliferative power. The stimuli leading to a rapid cell multiplication do not permit a further differentiation of the tissues. In some respects the simpler structures are comparable to the smaller follicles and the

more differentiated ones to the larger follicles in the ovary. However while the simplified tissue elements in cancer produce a similar kind the small follicles of the ovary do not produce their like.

The second mode of the simplification of structure carries with it some features of an adaptive process. Those structures develop under the relatively adverse conditions under which the transplanted organ lives which are best able to resist the adverse conditions under which they originated. Rapidly growing cancers whose elements usually possess a simpler morphological character may from this point of view be considered as well adapted structures though adaptive changes having been brought about exactly by those proliferative stimuli which were responsible for the origin of the cancer.

Following the transplantation of tissues cell complexes are frequently passively pushed into the transplanted piece from the outside as the result of mechanical pressure and absorption of fibroblasts carrying other cells along with them. Thus a factor is introduced which complicates the analysis of the condition in the transplant.

The rapidity in the absorption and organization of the necrotic material after transplantation of various tissues differs very much in accordance with the consistency of these tissues. In blood clots thyroid and spleen the absorption is relatively rapid while in the liver and still more so in the kidney it is very slow. Giant cells take an active part in the absorption of the necrotic material which they seem to substitute. They play a rôle toward fibrin and necrotic tissue similar to that of the osteoclasts in the solution of the bone.

The author concludes after these investigations that it is probable that during the process of organization of necrotic material factors are introduced which tend to limit the rapidity of the organization at an increasing rate. This would tend to make the organization within a certain range a self-limiting process.

GEORGE E. BEILBY

Nageotte J. and Sencert I. Surgical Repair of Cerebral Tissues by Grafts of Dead Tissue (Délégation chirurgicale de crânes et de tumeurs greffées dans le cerveau). *Bull. et mém. S. de l'Acad. P.* 1918, 21, 1545.

About a year ago Nageotte showed that dead tissue grafts such as tendons, aponeuroses and enveloping membranes are entirely revived after a few days by the immigration of new cells and the reestablishment of circulation by a new formed vascular network. This referred only to sections of such tissue placed in the organism. For the past eight months the authors have made a number of similar animal experiments grafting fragments of dead organs in the place of identical fragments removed from the same organs in living animals. Thus in a dog they have grafted about 5 cm. of the common extensor tendo of the right anterior paw. The same experiment was repeated in another dog. Both dogs were killed later and examination showed that the

operated tendon in no way differed from the corresponding tendon in the opposite paw except that the line of suture could be distinguished. There was no peritendinous adhesion. Illustrations of the grafts are given. The original specimen shows that the grafted dead tendon became a living tendon showing all appreciable morphologic and physiologic attributes.

To study what occurs in the case of these grafts the authors made similar experiments in other dogs which were sacrificed at short intervals. The grafts taken from the living animal are always preserved for a long time in alcohol before use. It appears to the authors that after removal by phagocytosis of all tendon cells which the alcohol has killed, new fibroblasts and new tendon cells have invaded the graft in its new situation while there is a complete merging of the connective substance of the graft and tendon so that every trace of union disappears. By the end of three months the vascular network has been reconstituted and does not differ from normal tendon. Thus as the connective substances of the graft, the essential element of tendon tissue have persisted and not any tissue which has been substituted for it, the authors feel it is correct to say that the tissue which actually fills the loss of substance in the tendon is living but that it is the dead graft which lives again.

The authors have made a number of experiments on dogs also with pieces of the primary carotid replacing similar pieces previously removed. They have not lost a single dog. By patience they have succeeded in showing the first complete successful graft of dead carotid tissue. Not only did the graft deprived of its living endothelium at the beginning revivify and amalgamate with the vessel but the circulation was not hindered. W A BRENNAN

ROENTGENOLOGY

Boggs R H Comparative Value of Radium and Roentgen Radiation *Am J M Sc* 1918 clii 690

The author takes issue with those who contend that the radiation from the roentgen tube is similar

to that of the radium emanations. There is both a physical difference and also a difference in their physiologic action on diseased and healthy tissue. The author also disagrees with those who claim that the roentgen ray will accomplish all that can be accomplished with radium and with those who claim that radium will do all that can be accomplished with the roentgen rays. It is the author's opinion that the difference in the physiologic action between radium and the roentgen rays may be due to radium giving off β rays and that the γ rays from radio active substances set up more intense secondary or β rays than from a roentgen tube.

Clinically while both produce a destructive inflammation in sufficient dosage recovery occurs from a reaction of much greater degree from radium than from that produced by the roentgen rays. Therefore radium can be used therapeutically to better advantage where a low grade destructive action is desired. This explains why radium is superior in the treatment of cancer of the uterus and rectum, epithelioma of the lip, mouth, throat, eyelids or lesions situated on the mucous membrane as well as its ease of application in cavities. On the other hand the roentgen rays are indicated where large areas are to be treated.

The author considers the radium exposures much more efficient than the roentgen rays in the treatment of vascular nevi because with radium there is a much greater reaction in the endothelial cells of the small vessels.

The author takes up in detail the technique in treating carcinoma of the uterus, rectum and breast and also epitheliomata. In cases of epitheliomata equally good results are obtained with radium and the roentgen rays. In cases of carcinoma of the uterus and rectum both agencies should be used. In cases of breast carcinoma he considers of greater value the roentgen ray treatment. He constantly emphasizes the necessity for specialized study in treating malignancy, insisting that the radiotherapist should know the physiologic characteristics of both agents and should be perfectly familiar with the cellular pathology as well as the avenues of metastases of the various new growths, especially the lymphatic system. W A EVANS

GYNECOLOGY

UTERUS

Dorsett E L. Sterility Due to Retrodisplacement of the Uterus. Non-Operative and Operative Treatment. *J. M. St. M. J.* 9: 35

Dorsett states that retrodisplacement of the uterus alone not necessarily the cause of gynecological disturbances but in a large majority of cases is coincident with other lesions in the pelvis. It may however be the cause of sterility. If the retrodisplacement is not associated with any other pathology it should be treated by non-operative measures i.e. pessaries and cervical dilatation.

The important cause of retrodisplacement are traumatism and frequent bladder overdistention.

All cases of sterility should be carefully examined and the exact cause determined before proper treatment is instituted.

Operative procedure in the congenital ante flexion of the uterus gives poor results as far as pregnancy is concerned. It is also imperative to ascertain the mobility of the spermata in the semen of the husband. The nature of the chemical reaction in the vaginal secretion is also of importance. As a mechanical cause of sterility may be mentioned the position of the cervix in relation to the anterior vaginal wall when the uterus is retroverted thus preventing the entrance of the semen.

As non-operative method the author advises Hank graduated dilators for the cervical stenosis and a properly fitting Hodge pessary for the retroversion. Both should be applied under the most aseptic conditions. He considers coitum in cases of sterility not only useless but even harmful in some cases by producing a certain amount of traumatism in the endometrium and some disturbance of the deeper uterine tissues with resulting cicatricial adhesions and chances of pregnancy.

As to operation he uses the Dudley operation for the cervical stenosis and atomy of the os uteri and the modified Gillan for the retroversion with most successful results. In the latter operation it is important to properly implant the round ligaments into the rectus muscles or their aponeurosis and not far above the symphysis pubis. Also the round ligament should be sutured and drawn through the muscle and fascia that the distal unused segment of the ligament and its uterine origin should both be in contact with the peritoneal peritoneum.

All operative cases should be carefully examined and followed up after leaving the hospital.

Report of ten cases of sterility treated by both operative and non-operative method accompany and illustrate the author's experience.

L. R. GOLDSMITH

ADNEXAL AND PERIUTERINE CONDITIONS

Castano C. A. Pathogenesis and Pathology of Phlegmon of the Broad Ligament (P. 102). *J. M. St. M. J.* 9: 35

Castano brings his extensive article on phlegmons of the broad ligament to a conclusion. It is amply illustrated and accompanied by an extensive bibliography. He made a number of animal experiments. The conclusions arrived at are given.

The experimental results showed that in the guinea pig and rabbit the same infections of the genital tract which occur in women may be observed. These however necessitate special conditions during the experiments which have not been known previously. (a) A specific microbe for the animal obtained from the human genital tract which on cultivation serves for further experiments giving rise to the required lesion which has a predilection for the place hence taken (b) the staphylococcus is the best agent for causing infections in animals (c) it is necessary to traumatize the uterus in order to produce infection (d) the microbe must not be very virulent as to give the lesions time to develop.

Experiments show that there are different routes for infection of the broad ligament. It may occur by direct contagion by the venous or lymphatic routes or by continuity of the tissues.

The one form of infection of the genital tract producing lesions which has not yet been described is latent microbism (metritis parametritis phlegmons when a determining cause such as traumatic infection).

In animal injections of human germs streptococci staphylococci bacilliformis or gonococci produce only attenuated lesions in the uterus and vagina the being in animals a marked defensive action against uterine and vaginal infections.

During pregnancy and abortion infection takes place through the greatest facility. An infected abortion can be produced in animals with all the lesions which occur in women. Vulvitis agnate metritis salpingitis parametritis diffuse pelvic cellulitis and phlegmons of the broad ligaments can all be produced in animals.

The only method of anatomically studying the evolution of phlegmons of the broad ligament is by means of experimental research. It has been possible to follow a series of phases of inflammation of the broad ligament which have never been observed in the human female.

Serous or edematous parametritis may exist as an anatomical clinical entity.

Inflammation of the broad ligament occurs in the same form as inflammation of the cellular tissue in any part of the body.

It is not necessary that the peritoneum be attacked in parametritis or in phlegmon of the broad ligament

W A BRENNAN

EXTERNAL GENITALIA

Pallares J E A Case of Congenital Gynatresia
(Ligeras consideraciones sobre un caso de ginatresia congenita) *Siglo méd* Madrid 1918 lx 1034

The author's case of congenital atresia was in a girl aged fifteen years. She had never menstruated. Examination showed a swelling the size of an orange in the right iliac fossa. It could be felt from the symphysis to the umbilicus. Further exploration showed that the hymen was imperforate, bulged outward, and a clear fluctuation could be distinguished there.

A diagnosis of hæmatocolos due to imperforate

hymen was made. The imperforate membrane was incised and more than a liter of black thick blood flowed out, followed by a disappearance of the tumor.

By palpation it was found that there were two cavities: a vaginal cavity and a large distended uterine cavity, both were separated by a thin septum, apparently the remnants of the cervix. The tubes were normal.

The author considers the case not only one of imperforate hymen but of atresia of the lower portion of the vagina. Such an occurrence in accordance with the theory of Nagel and Veit is not usually due to a suspension of the development of Mueller's ducts but rather to some adhesive process of unknown origin which causes fusion of the inferior portion of the vagina similar to a fusion produced in any other part of the genital tract.

W A BRENNAN

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Mosher G C A Study of Various Cases of Pregnancy Toxæmia *Am J Obst N Y* 1931 xviii 83

During the winter and spring of 1918 the author has had under observation 32 cases of pre eclamptic toxæmia or eclampsia. Since May 1917 49 cases have been under treatment including 6 cases of pernicious vomiting. Why there should have been in the six weeks from January 1 to February 15 1918 as many such cases as would ordinarily be met in a year is not understood. One can only account for the frequency of toxæmia by charging it either to the extreme changes in climatic conditions or else to the nervous unrest and tension on account of the war.

Accepting a rational theory of the production of eclampsia the author has tried to standardize the plan of prophylaxis and treatment as follows:

- 1 Diet which shall be of non irritating food
- 2 Elimination encouraged by kidney, bowel and skin. Intake and output of fluids is a most important routine and must be shown in a daily calendar report

- 3 All foci of possible infection tonsils, teeth, kidneys and bowels should be discovered and eradicated

- 4 Deep breathing by aiding general circulation and by fresh air avoids danger of asphyxia

- 5 Free exhibition of alkali salts and food antacids

- 6 Veratrum viride is recommended to lower blood pressure, reduce the pulse and aid diaphoresis

- 7 The emptying of the uterus as a therapeutic measure to be done in the way least conducive to shock, indicated as soon as prophylactic measures fail.

E. VARD L. COHEN

Rongy A J Indication for Cesarean Section with a Record of Personal Experience in a Series of 109 Cases *Am J Obst N Y* 1918 lxviii 84

The treatment of eclampsia still furnishes ground for prolonged and animated discussions. The pendulum of opinion is swinging to and fro.

Women seized with convulsions after the thirty-sixth week of pregnancy who are not in labor whose cervix is thick and long and who do not respond promptly to medical treatment should be delivered by cesarean section. Such patients if not too toxic usually recover. The chances for a viable child are also better. Cesarean section has no place in eclampsia when labor has already set in; in such cases the administration of large doses of

morphine is the best treatment. Cesarean section has no place in the pre eclamptic stage for in these cases the induction of labor is followed by the best results for the mother.

Nine instances of placenta prævia occurred in the series. Seven of the mothers recovered. One of them died of gangrene of the uterine wound resulting in general sepsis. The other patient also died of sepsis on the sixth day following operation.

The treatment of placenta prævia requires the experience of more judgment than any other obstetric complication for in no class of patients is the immediate outcome of the case so uncertain.

Cesarean section was performed in 8 patients in whom forceps delivery had been attempted by the attending physicians. All of these patients were victims of contracted pelvis. Two patients had previous labors terminated by pubiotomy. These two cases and a number of others clearly demonstrate that pubiotomy does not permanently enlarge the pelvic girdle. If it does the enlargement is so slight as to be hardly perceptible at a point to be borne in mind.

In two cases fibroid tumors in the lower portion of the uterus prevented the head from passing through. In both a classical cesarean section was done and the fibroids were not disturbed. In one case section was performed because of double uterus. In two patients some form of atresia of the cervix existed. Both were primiparæ. One patient who had a congenital heart lesion was dangerously ill during the last three months of pregnancy. Interruption of pregnancy was rejected. When labor set in it was thought best to deliver by cesarean section. This patient made an uneventful recovery but died of heart disease three years later. The other cases presented no unusual features. Section was performed because of some deformity of the pelvis, some disproportion between the fetal head and the pelvis or some impaction of the presenting part.

A mortality of 7 per cent is not large in a group of patients who were not selected and who presented almost every obstetric complication.

EDWARD L. CORLI

Adair F L Some Remarks on the Relationship of Syphilis to Abortion, Miscarriage and Fœtal Abnormalities *Am J Obst N Y* 1918 lxxix 678

There are reported 1095 cases in whom there was a history of 2773 pregnancies 422 of which ended at term.

There were 109 patients who had 19 abortions in a total of 621 pregnancies or approximately one abortion to three pregnancies. In the non syphilitic and negative Wassermann group there were 83 cases

with 142 abortions in 464 pregnancies or about one to three. The 13 syphilitic cases had 3 abortions in 14 pregnancies or about one to three. Apparently syphilis is not a very potent factor in producing the termination of pregnancy during the first trimester.

There were 40 cases with 62 miscarriages in a total of 102 pregnancies or about one to three. There were 30 cases without evidence of syphilis in whom there were 49 miscarriages in 161 pregnancies or nearly one in three. In seven cases with indications of lues there were 10 miscarriages in 7 pregnancies or a little more than one to three. This indicates that syphilis is not responsible for any high percentage of miscarriages.

In considering the premature births in this series it is found that about one third of the mothers gave evidence of syphilis. About 10 per cent of the premature infants give positive evidence of luetic infection. About 10 per cent of the mothers who had stillbirths gave positive Wassermann reactions. Of the stillbirths in the hospital 12 per cent were proved syphilitic. Two of the malformed infants were born to syphilitic mothers. This is a higher ratio for those with syphilis than for those without.

Syphilis was proved in 10 out of 5 cases of hæmorrhage of the newborn. EDWARD L. CORNELL.

Bugbee H. G. Renal Complications of Pregnancy from the Standpoint of the Urologist. *J. Am. M. Ass.* 1918, LVII, 1538.

The author calls attention to the important rôle played by the kidneys during pregnancy and makes a strong plea for greater co-operation between obstetrician and urologist.

Bugbee gives the following etiological factors as of importance in rendering the kidneys particularly susceptible to lesions during pregnancy:

1. Since the kidneys are organs of elimination they are called upon to eliminate the toxins of the fetus as well as of the mother.

2. The skin is less active than normal, rendering little assistance.

3. The diminished activity of the woman leads to less activity in the organs of metabolism, poor digestion and sluggishness of the bowels, thus increasing the amount of toxic material thrown on the kidneys to eliminate.

4. The increase of toxic products passing through the kidney causes kidney irritation which leads to congestion, thus producing an important predisposing factor to infections.

5. The lowered resistance of the patient allows focal infections to become more active.

6. Co-existent with the foregoing, more bacteria are thrown into the blood stream and the kidneys already congested are fertile soil for infection.

7. Intra-abdominal pressure mechanically interferes with the normal function of the abdominal viscera.

8. When a pre-existing kidney lesion is added, such as a renal or ureteral anomaly, renal tumor, or

malposition of the kidneys, a chronic infection, chronic nephritis, or a calculus as well as an ureteral lesion interfering with drainage, the urologic aspect of the case becomes most important.

This raises two questions: Should not the kidneys be relieved of the load so far as possible and how may this be accomplished without a complete examination of the patient and attention to all details of bodily activity?

As a result of his examination of a series of cases Bugbee found that in 90 per cent of the cases observed the infection was due to the colon bacillus. The bacilli were found on both sides in 75 per cent of the cases, but in all the infection was more severe on one side than on the other. The kidney function was diminished in all.

More than 90 per cent of the cases observed have been acute infections, most marked on one side occurring during the last three months of pregnancy. The patients were suffering from absorption, high temperature, pain in the side and urinary symptoms. These patients were all catheterized, given pelvic lavage and in many the ureteral catheters, one or both, were retained from twenty-four to forty-eight hours. All were relieved and went on to term.

The treatment resolves itself first into prophylaxis. Such infections may be prevented by impressing on the obstetrician and general practitioner the important rôle of the kidneys during pregnancy. Any variation from a normal condition should be an indication for a complete urologic examination.

Closer attention should be given to the metabolism of the patient, especially in the intestinal tract, thus eliminating as fast as possible the amount of toxic products of intestinal putrefaction thrown on the kidneys, not by the administration of cathartics but by exercise, diet and plenty of fluids. This also means a diminution in the number of bacteria passing through the kidneys. In this connection the importance of eliminating focal infections, whether oral, nasal or otherwise, cannot be overestimated.

When a pathologic condition in the urinary tract has been found which might predispose to a kidney infection, it should be eliminated early in pregnancy if possible. Patients as a rule withstand treatment and operation during the early months of gestation with remarkably little reaction. Whether or not a woman should attempt to go through a pregnancy with a renal lesion present, thus subjecting the kidneys to the added strain and possibly infection, is a question to be decided in each case.

Renal anomalies, tumors, calculi and infections come under this consideration and some surgical measure, nephrectomy or nephrotomy, may be advisable at once.

In the presence of such lesions, relief of the kidney to the extent of diminishing its load is certainly indicated and consists of the most careful attention to details.

When a kidney infection is already present, the indications are to give relief from the toxæmia by

A dead foetus was extracted manually the intestine was reduced and the placenta extracted. The usual signs of peritonitis were present.

A median infra umbilical laparotomy was done. A large quantity of blood and coagulum was found in the peritoneum this was swabbed away. The uterus was exteriorized the extensive tear on the left side which extended from the tubal insertion down to the cervix was sutured in two planes the pouch of Douglas was drained as well as the vesico uterine space. The bladder which was also ruptured was respected but a permanent catheter was placed. The abdominal wound healed well. After fifteen days the vesicovaginal fistula diminished in size but it did not cure spontaneously and a further operation was necessary after two months. The patient was in excellent condition after a lapse of three months.

W. A. BRENNAN

PUERPERIUM AND ITS COMPLICATIONS

Potocki *Bacteriology of the Blood in Puerperal Infection* (Bactériologie sanguine dans l'infection puerpérale) *Ann de gynec et d obst* Par 1918 lxxx 217

In 196 puerperal cases examined blood culture was positive in 91.1 or 46.4 per cent. In about 93 per cent of the positive cases a single organism was found namely the streptococcus and only in a few cases were two three or more associated microbes found. When puerperal fever is present and the blood is sterile the condition is probably due to the resorption of bacterial toxins.

The author discusses his various findings in detail. He asks whether the results furnished by the bacteriological examination of the blood can be counted upon if in the course of puerperal fever neither the pulse temperature the local signs bacteriologic examination of the general state nor the histologic alterations of the blood furnish sufficient evidence for prognosis. It does not seem to the author that at present any more than probabilities

can be drawn from the blood findings nevertheless they strengthen the results found by other procedures. He thinks that the following conclusions can be drawn.

The gravity of the septicæmia is an indication of the rapidity and intensity of the development of microbes in blood cultures of the number of the microbes of their hæmolytic properties and if there is hæmolysis of the precocity of this hæmolysis.

The presence of microbes in the blood does not necessarily imply a fatal termination of the puerperal infection but its presence aggravates the prognosis because with it the mortality is 33 per cent while puerperal mortality is only 8.5 per cent when the blood remains sterile.

When the septicæmia is accompanied by chills the mortality reaches 60 per cent if the blood contains pythogenic microbes while it is only 10 per cent if the blood is free.

The streptococcus is the cause of the gravest forms of puerperal septicæmia whether it exists alone or in association with other germs. But other germs especially the staphylococcus and gonococcus which after the streptococcus are most frequently met may cause especially fatal septicæmia.

Treatment based on the employment of appropriate sera and vaccines appears to be the logical method of opposing puerperal infection. The agents employed should be specific for the existing organisms.

In certain cultures of puerperal blood infinitely small micro organisms are found which stain only with difficulty. Their presence does not appear to intensify the gravity but they may favor the development of pathogenic microbes.

The author adds a chapter on the history of the study of micro organisms in the blood in puerperal infections referring to Loze and Feltz two French investigators who reported their researches and findings as far back as 1869. Pasteur's investigations were not published until 1879.

W. A. BRENNAN

GENITO URINARY SURGERY

KIDNEY AND URETER

Barney J D S me P lnts in the Management of
Ur nary Calculi 11 1 J S rg 9 8 389

The author lays much stress on the large number of mistaken diagnoses in urinary calculus. He finds that out of 290 hospital and private cases 53 or 18 per cent had had one or more previous operations mostly (36) on the appendix. These mistakes in diagnosis have been made by skilled urologists at every faculty at hand for arriving at a correct solution but in many simple mesenteric ureters not made use of. The fact that he may find persistently negative urine on X-ray plate the presence of stone together with slight adynamic symptoms make the diagnosis a matter of great difficulty in certain instances.

Attention is called to the point in the diagnosis of ureteral calculus. This is best described in the author's own words:

In a certain number of cases (no doubt in all) of stone in the lower ureter I have observed that when tenderness is present it is found at its maximum at one point especially covered by the tip of the index finger situated one inch below a dorsal right angles to the centre of the iliac triangle between the umbilicus and the ante superior spine of the ilium. This point is the hub of a wheel of tenderness the spokes of which radiate from a central station. Deep pressure here will almost invariably elicit sharp pain while equally in the presence of a centrally placed but a short distance away produces little or no discomfort.

While it is true that this phenomenon has been absent in a few cases which clearly show that there is a stone in the lower ureter and while I have also noted its presence in one or two cases where no stone was found I none the less regard it as a diagnostic point of considerable importance and often the only object of a symptom. Furthermore it has been found more often where the stone was of long residence in the ureter than in cases where the calculus had but recently descended from the kidney the probable explanation being that in the former event ulceration of the ureteral mucosa had been produced. An investigation on the character of the patient's voided shows that while the ureter may be indurated often is directly compressed a coil of intestine or a piece of omentum may sometime intervene. In any event it is possible that the urine in the distended ureter is compressed into small compartments thus impacting the stone still more and resulting in still greater distention of the ureter or stretching out a mass of ulceration already present. But just by the point described should be that of maximum tenderness. I must as yet unperpetrated to say. While it is

true that the finger seems to cause more direct pressure upon the ureter at this point than elsewhere it would seem as if ever changing intra-abdominal and always different extra-abdominal conditions could alter the phenomenon described.

Among other observations made in this article are the following:

The coating of obscure stones in the renal pelvis with crystals is of comparatively little value in diagnosis.

An ureteral calculus may not produce a scratch upon a tipped catheter.

A very small calculus in the lower ureter will generally pass out spontaneously. Owing to the difficulty of recognizing them at operation every palliative measure should first be tried especially dilatation of the ureter either by a simple ureteral dilator or by the scissor through an operating cystoscope.

A vesical calculus should be removed by lithotomy and lithopapery. There are but few contraindications to this procedure and the mortality is much less than with suprapubic operations.

In cases of bilateral renal stone the better kidney should be operated upon first or in favor of the less diseased both can be done at the same time.

Nephrectomy is an operation attended with grave dangers not only at the time but subsequently. Nephrectomy is the operation of choice and unless it is very clear that the kidney is worthless primary nephrectomy is to be preferred to nephrotomy. The crushing of stones within the kidney pelvis and their removal in fragments is theoretically possible but actually a difficult and unound procedure in many cases.

The frequent passage of calculus from the kidney indicates the presence of an abnormal condition in the organ and this not only can be demonstrated but also can be remedied in most instances.

With a calculus pyonephrosis and stone in the lower ureter in the same side nephrectomy can be done without interfering with the ureteral calculus. The latter will produce no further disturbance.

M cGowan G T eatment of Colon Bacillus Infections of the Kidney and Bladder by Surgi I M su s Applied to the Ascending Colon J A M 4 9 8 1 897

The author has frequently observed that colon bacillus infection of the kidney and bladder persists and unyielding to treatment invariably due to calcareous masses of the fecal ureter. It is usually the case in the caecum and results from the mobility of the organ by adhesions to the surrounding structures. This state of the fecal current in the caecum supplies a constant stream of culture

bacilli which reach the kidney by way of the lymphatics or blood stream and results in infection of the kidney pelvis when there is any interruption of the free exit of urine either in the ureter at the bladder neck or in the urethra. When once established the infection remains until the condition in the large bowel is restored to normal by surgical measures. Two cases are reported in considerable detail in support of this view.

Case one concerns a man aged forty six years who complained of prostatic trouble. The urine contained many motile bacilli and pus cells. There was no prostatic infection and no residual urine. A mild cystitis was observed over the bladder base and pyopy were present in the posterior urethra. These latter were removed and the bladder treated daily by lavage with the result that the urine became clear. Colon bacilli subsequently appeared in the urine and again disappeared under lavage treatment. This was repeated several times. Finally the colon was suspected as the basic cause of the trouble. Stasis was found at this point by the X ray. A laparotomy was done and the cecum was found bound by adhesions to the ileum and the abdominal wall and doubled over in such a way as to adhere to the ascending and transverse colon. An elongated appendix with its tip adherent to the liver was removed and the adhesions about the cecum broken up. Operation was followed by a permanent disappearance of the infection from the urine.

In case two an old stricture was supposed to have been the cause of the infection. But the bacilluria and symptoms remained after full dilatation. Subsequent examination showed a small glandular prostatic nodule within the urethra together with a median bar. These two conditions were corrected by a suprapubic operation. The symptoms persisted however and a bacilluria remained in spite of subsequent local treatment to the bladder and prostatic urethra. Ureteral catheterization at this time showed a colon infection of both kidney pelvis. Stasis in the ascending colon was demonstrated with an old adherent appendix attached to the top of the bladder. At operation the ascending colon was found twisted on itself and adherent to the transverse colon. Recovery was slow but complete. A subsequent perineal prostatectomy was performed to remove a small prostatic lobe still remaining in the opposite side. The final result was a disappearance of all the symptoms and a clear urine free from infection.

H A FOWLER

Peterson A. The Effect on the Kidney of Uretero-vesical Anastomosis. Experimental and Clinical Report. *J Am U Ass* 1918 lxxi 1885

A brief historical resume is given referring to the published reports of Baker, McArthur, Davenport, Bray, Franz and Kronig.

The various techniques of ureteral implantation are then briefly described: the technique of Coffey and Stiles for implantation into the bowel the

recently published technique of ureterovesical anastomosis of Furniss and the unpublished technique suggested by Mann of the Mayo Clinic.

The author's purpose in making these experimental and clinical observations has been to evolve a technique for the reimplantation of the ureter into the bladder and to study the effect of such operations on the kidney and bladder. Unilateral implantation was performed on 18 dogs and bilateral implantation on 3. Coffey's technique was employed in eight cases. Five animals showed an entirely normal kidney and ureter examined from three weeks to five and one third months after operation. One animal died from peritonitis on the sixth day. It was possible to make the ureter leak. One death occurred in twenty four hours. Miliary abscesses were found in the kidney. One animal died of distemper on the tenth day. The pelvis and ureter showed a slight hydronephrosis.

Stiles technique slightly modified was employed in eight cases. Care was taken to avoid injury to the ureter and no suture except the anchoring suture was permitted to enter the wall of the ureter. There were six complete successes. In one case the ureter pulled out of the bladder. One case showed advanced hydronephrosis one and one half months after operation.

Five operations were done with the technique suggested by Mann. In four the results were perfect one resulted in hydronephrosis four months after operation.

Three operations employing Furniss technique resulted in complete success.

In reviewing the results in 4 experiments normal kidneys and ureters were found in 15 instances. Slight hydronephrosis in 2, marked hydronephrosis in 1, miliary abscesses in 1, kidney pyonephrosis in 1, hypertrophied ureter in 1 and the ureter pulled out in 2. Normally functioning kidneys were found in 19 cases (80 per cent). There was complete failure in 5 cases (20 per cent).

In view of the simplicity of the technique and the end results the modification of Stiles technique seems the most suitable in ureterovesical anastomosis. Success depends upon (1) rigid asepsis (2) a suitable mechanical scheme to establish waterproof anastomosis without compression of the ureter (3) avoidance of any suture entering the wall or lumen of the ureter other than the anchoring suture and (4) avoidance of placing any clamp whatever across the extremity of the ureter.

In 21 cases in the Mayo Clinic the ureter has been transplanted into the bladder and the effect upon the kidneys has been noted. Implantation was done for a variety of conditions. The results were checked up by cystoscopy, ureteral catheterization, functional tests and pyelography whenever feasible.

Four patients with carcinoma of the bladder died. In 17 of the 21 cases subsequent examinations were made. In 9 cases (53 per cent) the function of the kidney was entirely normal, fair function in 3 cases (18 per cent) and functionless kidneys in 5 cases

(30 per cent) Deducting those case in which the ureter as dilated at the time of the peration and those in which the ureter as implnted under tension normal kidney function occurred in 13 per cent and fair function in 5 per cent

The following conclusions are drawn

1 From experimental and clinical obse tions it is obvious tl at a normal or almo t normal kidney and ureter should result following the implantation of the ureter into the bladder

The utmost care to minimize the operative trauma must be obser ed

3 The placing of a forceps over the end of the ureter should be a oided

4 No suture should enter the all or lumen of the ureter other than the anch ring suture placed in the split e tremity of the uret r and the pproximation of the all of the blidde mu t be acc m plished without undue c p ion

5 When marked dilatati n f the u ter has occurred prior t surgical intervention and h n t is necessary to impl nt the u ter und tensi n a succe ful reult i ery doubtful and lig t n is preferable to any effort of implantat n

The paper is fully ll tated and ll t led c se histories are appended II A Fo

Nystrom C Sten sis of the U ter C used by
Appendicitis (L F H Ur t t d h
App d g s) A d m d f k St kh lm 98
I K 18 09

In the case of a girl aged se enteen d gnosed s tuberculous peritonitis with d h se abd min l pains operation sho ed the apex f the app d strongly adherent in the middle of the edge of the pelvic all with the mesente v also loosely adhe ing On loosening up the apex the appea n e be neath was like the remnant of an old absc ss Under the unfolded appendi and mesente y a d ret pe i toneally there appeared a solid grey h tumor the size of the thumb e tending from above d nward and inward and ending at ab ut the point of n at n of the appendix On the further side of the tumor a cord e tended the appearance of hich c rresponded to the ureter

On proceeding to exti pate the tumor the author found that it was the u ter vith its upper part enormously d lated the lo er thin part being trace able downward into the small pelvi The t an t n point between the dilated and normal pa ts of the ureter corresponded to the point of in ertion of the appendix The ureter was completely stenosed t this place The operative incision was enlarged and exploration of the upper part of the ureter made to the kidney pel is The right kidney as unusually medially placed and only about two third s normal size After the author had satisf ed him elf that the left kidney was in every way normal the right kidney and its thickened ureter v ere remo ed the appendix e ti pated and the area d ained The patient made a good recovery

Examination showed that the apical end of the

append v was completely obliterated that the re moved kidney was hydronephrotic and atrophied The ureter was greatly thickened with s illen alls

Complication of appendicitis by ureteral stenosis appears to be very rare and the author could find only a few cases reported

Fenger of Chicago reported such a case in 1896 in which the lo er part of the ureter v as surrounded by an appendiceal abscess and was compressed by it The upper part of the ureter had degenerated owing to a hydronephrotic condition of the kidney and the flow of urine as interrupted Outside of this case and t o thers reported by Piese the author has found no others in which an appendicitis was concerned tl an ureteral stenosis Sprengel s mon graph n appendicitis does not ment o s cha possibility W A Bre v

Herb t R II Acquired St icture f the Lo er
End of the Uret r J lm lf t 98 L 1
7

The uth r summ rizes his paper a follo s Strictures f the l er end of the ureter occur mo e frequently than i commonly belev ed a d n t a fe f them are of the inflammatory acqu ed type

Stricture f thi p rt of the ureter may result from infection sp a ling from an adjacent seminal e icle

3 Stritur s in tl locality pl y an import t rle the eti l gic fact r in some of the obscure ffection f the kid ey

4 The importance of e rly diagnos s and treat m nt bef e rious change occur in the kidney cann t be too str gly emphasiz ed

In d cusing th treatment of ureteral stricture Herb t dcribe t th illu trat on) his success l use f a ho k haped knife J D B KEY

BLADDER URETHRA AND PENIS

Barring B S A Very Large Colloid Carcin ma
of th Bladd r I t t J S g 98 xi
4 2

Th v ry unu al se of colloid ca cinoma v a tta h d t cl bdomi il all and to the bladder It ga no u n ry symptoms and cy to copically it va s n to indent the bladder all v hich was not in any y changed The patient as g ven ne d se of d m o r the tumor v hich had no effect

The tumor v as operate l upon and remo ed and the patient made an e cellent reco ery The tu m r v a d gnosed hi tologically as a colloid carci n m r of the bladder V D LE PI S E

Arquellad Vesical Calculi in Cl lldh od (C l uio
l l f c) Med Ib M d d 98
97

Arquellada s observation are based upon the e traction from young children of 94 vesical calcul varying from o 5 to 45 gr in weight

The formation of calculi is due either to the pre

ence of a foreign body, an infarct or some foreign substance in the bladder.

The symptoms may be divided into three groups: those of presumption, those of probability and those of certainty. The first group includes pain, urinary incontinence, rectal prolapse, peculiar actions of the child and the state of the genital organs. The symptoms of probability include intermittent jet during miction, more or less hæmaturia and alterations in the composition of the urine. The symptoms of certainty are seeing and feeling the calculi.

The author discusses this symptomatology. Spurring of the urine in jets is due to small calculi incontinence to large calculi.

Symptoms of certainty are to be obtained by catheterization, the use of the cystoscope and the radiograph, the last being the best. In the child it is almost impossible to introduce the cystoscope to the bladder; hence this means is not utilisable. The author thinks also that on account of the manual difficulties catheterization should only be employed when radiography is not available.

Arquellada says there are three methods of surgical treatment for the treatment of bladder calculi in children: namely lithotomy, perineal section and hypogastric section. The first method is practically obsolete. Hypogastric section is the method of choice and has been systematically used by the author.

W. A. BRENNAN

Nystrom G. Repair of an Ureteral Defect by a Plastic Operation on the Bladder Wall (Ersatz eines Ureterdefekts durch Plastik von der Blasenwand). *Nord med Ark* Stockholm 1918 li Kirurgi 142.

A woman seventy-four years old suffered from a right-sided pyonephrosis due to an extensive tumor in the small pelvis which surrounded the ureter. As a preliminary treatment the pyonephrosis was drained by a lumbar incision and the immediate fear of sepsis removed. A urinary fistula, however, persisted. To remedy this either the tumor mass could be excised or a nephrectomy might be done. The extent and fixation of the tumor as well as the patient's age did not permit its extirpation. Also there was doubt as to the functional value of the left kidney. As catheterization of its ureter was impossible owing to a deformity of the bladder by the tumor mass, Nephrectomy of the right kidney was therefore ruled out.

The author decided to try a uretero-neocystomy. On sectioning the ureter above the tumor it was seen that the ureteral stump was too short to be anastomosed directly with the bladder. Therefore the defect was supplied by a plastic operation made at the expense of the bladder wall: a tongue-shaped strip of this being cut and formed into a tube which was joined by an end-to-end anastomosis with the ureteral stump. The results at first were good. After a month a small fistula appeared at the site of the anastomosis but this healed up and the patient was discharged. Later on however another

fistula developed which would not heal. As the author had convinced himself of the satisfactory condition and functioning of the left kidney, a right-sided nephrectomy was done. A probe showed that the ureter was stenosed at the site of the anastomosis.

The patient's general condition was much improved after the removal of the kidney, but she died later from extension of the tumor.

The author thinks that possibly the ureteral operation would have been much more effective if invagination had been done instead of an end-to-end anastomosis. He sketches the various experimental attempts which have been made to remedy ureteral defects by various kinds of implantations and also by free transplantations. He finds that transplants fail. Judging from animal experiments a piece of artery is not suitable; its epithelium apparently becomes damaged by the urine and the inflammation which is observed in the deeper layers would sooner or later cause stenosis if tried in human subjects. Implantation of an ureter into the appendix does not seem suitable owing to the great tendency of the latter to chronic inflammation and obliteration. The use of a resected loop of intestine to replace an ureteral defect appears to be promising. This should not, however, be transplanted in its continuity but the anastomosis with the ureter done at one end and the other end united directly into the bladder, thus leaving only one place where a stenosis might occur.

Where the defect is not too great the author believes that his own method of utilizing a strip cut out of the bladder wall itself might be the best solution, but further work along this line must determine the exact value of this procedure. The mucous surface of the bladder would not be affected by urine and the procedure seems physiological.

W. A. BRENNAN

Neel J. C. Diverticula of the Female Urethra. *Calif St J Med* 1918 xvi 494.

Neel describes a case of a congenital diverticulum of the female urethra which was first noticed in the eighth month of pregnancy. He gives a complete history of the case and four illustrations depicting his method of operative procedure.

The operation was performed under gas and oxygen anesthesia. A median incision was made through the anterior vaginal mucosa and the underlying fascia to the wall of the diverticulum, then carried backward to expose the neck of the bladder. The diverticulum was then dissected free from the anterior vaginal wall and the internal urethral orifice reduced to normal size with Kelly's mattress sutures of silk. On account of the extensive defect of the posterior urethral wall, complete excision of the diverticulum seemed to be contra-indicated. The wall of the diverticulum was very thin and was readily invaginated into the urethra by two rows of running mattress sutures. The fascia was then separated from the vaginal mucosa and overlapped

after the method of the author The exces ve mucosa was then resected and the cut edge refully app o nated

The important feature of thi c c acc rding to Neel as the e tensive defect of the posterior vll v hich had undoubtedly extended through the inte nal urethral orifice during the p oc s of del ery The recognized treatment in the past has been total e c sion of the sac thi hov er v as u ually followed by a u nary n tula ne sitatng a se ond operation as a rule E cision of the dive t culum in thi case would have ne stated th r moval f t least one half of the postero ll v h h uld ha e made clous e ith p im ry healing e tremelv doubt ful The cont action of the nvagin t d ll n takes pla e and the mbri ation of the o erlying fascia gives e cellent support without di rupting the u nary tract I Gr

Mosti R Hypoga t c De ation of th U ine in th Treatment of Urethral Wounds (La d on p gast i d ll el t t m t d ll f t d ll t) P l i R q 8 ch 374

In m re th n 400 ar v ound lse ed by the author he has een th urethra inju ed in only 8 Such wounds th refore ann t be on der d a frequent in r Th evolution f thi typ m st unfavorably affected h n complic t d by multiple i ceral v ound

The three most important ymptom upon v hich a d gna s can be f u ded a chu ia urethrorr hag v and flow of urine through the wound r hce With chu a acute complete retention is f equ nt The use of the catheter v ill al o di clo e an ureth al v ound The i dicat ns fo operation re t o fold to remedy u in ry ret n on and to p e ent infec tion While the u c of permane t sound cc m pl shes the first object in many cas s it as i ts v th spreading of infection it is foregn b dy v h h an set up n u thritis nd agg vate nd t n

The author th nk that an e ternal ur throtomy is the operation of choice to p e ent the spread of infect on I th majo ty of hi case th v so cated with a hyp gast ic cy tot n v was the procedure follo ed The pe nant c thete v not used unt l th a ea as le used and e ry t e f infection had disappea ed When the wound is judged to be aseptic in the fir t instance and the perineum ntact a hypogastr c cystot my alon done U eth otomy howe r gen ally indic ted under the same cond tions that complete su g c l clean ing indicated in other wa ound v when the projectile i l kely t be an nfecting one such a particl of shell or h nd gr nade et

Fro n his own e pe i nce and the results he ob tained the author belie es that hypogastr c yst o tomy is a prelim nary treatment of the g test importance n urethral gun hot ound and th t in some c ses it effects complete recovery from such lessons In any case t brings about a more peedy rec vey The associ ted cystotomy and e ternal

urethrotomy are ind cated when a p ojectil is re tained ith retention of u ine owing to the constant infection

Mosti critic es the views recently put forward by Fullerton in the *British Medical Journal* reg rding the treatment of th class of wound Fullert n recommended exte rio urethrotor y v ith a s pr pub c cystostomy if necessary ithout a perma ent catheter permitting the uri e to freely flow through the perineal incision in the bel ef tht normal u ine as detergent To th Mosti finds m ny objec t ons ap rt from the irritation produced after a time the p ocess of cicat i at on i delayed e or mously and fit ul tion will be const nt Fuller t n s vie that ureth otomy i indicated by the nature of the wou d rather tha by the pre ence of retention s critic ed by Mo ti v h bel eves that a simple cy otomy alone is called for if the cond tions a e a eptic and that ureth ot my i indicated only hen inf ction i pre ent or antic pated W A BRE

GENITAL ORGANS

Kimu T Tran erse Ect py of th Testis w th Masculine Ut ru t S g Phl 98 l i 4

A cording to the author ly ten cases of tra s ve e ect py of th te tis a e ported n the lite v tur v b f summ ry f the e case i give

The main feat res of the auth r s personal ob s ation follo A m le student aged e nty yea as adm tted with a swelling of the left scrotum This appe red one month prevous and as painl s It no le eloped rapidly to the si e f the f t painful and the o erlying skin was eddened Th as n u ea muti g los of appet te and se r The clin cal se tur sugge tel inca r ted herni

At op r t on a ur ous cond tion pre ented O opening the subcutane u adip ti e and fa ci a brov n ol red t sue resembling v hermal sac a di co ed This c contained som serou flu d and th mentum as adherent t it Ju t b neath the adherent o nentum as a thick firm o d hich e t nded do n into the scr tum v ard deep in the pelvic cavity and behind and underneath the bl dder Th s cor l the sp rmat c cord and the mentum had grov n int m tely tog ther

P thol i e amination sho ed th ck alled yst t o spt m t cord and a cylindrical m ss of t ue ith v c nal whi h v a l ned v ith mucous m brane When the cyst as opened t ote ticles e found B th testicl vere f n rmal si e and ppearance Bet een th m wa neither septum nor membrane Each testis had its own epid ym and normal d spermatic duct A c nal the all of which v o s cm th ck and ts lo er end termin ating in caecal fo m v as bet een the cord Micro scopic e amination hov ed two spermatic cords The i ner su face f the s c l ch term n ted in

caecal form was lined by one or two layers of cylindrical epithelium with cilia. The structural appearance microscopically resembled that of a uterine wall not that of an intestine or a Meckel's diverticulum.

There are two different points of view respecting the mode of origin of the transverse ectopy of the testis. According to Lenhossek. The abnormality may depend either on a faulty development of both testicles in one side or on a faulty descent of the testes due to the abnormality of the gubernaculum testis. From their own observations Romanovsky and Winwarter inferred that the right testis must have been either pressed to the left side or taken with the left testis into the open processus vaginalis because of some abnormal connection.

The author believes both views are correct and are supported by the observations upon which they are based. The tissue resembling the uterus in structure is interpreted as a masculine uterus. Its existence is explained as follows. Originally wolffian ducts and Mueller's ducts run parallel to each other. In the male the former develops continually while the latter diminishes by degrees after the tenth embryonal week. But if from some cause a part of Mueller's ducts remains behind and develops further then there may occur a so called masculine uterus.

H A FOWLER

Watson E M. The Human Seminal Vesicles at Birth. *Ann Surg Phila* 19 8 LVIII 416

The basis for this report was obtained from a study in serial sections of the genito urinary tract of a male foetus at birth. Every section from the urachus to the anterior urethra was saved for study. In addition a reconstructed enlarged drawing was made from 120 serial sections to give a graphic representation of the outline of the seminal vesicles at this stage.

Each vesicle presents an extremely irregular outline being composed of numerous outpushings of diverticula of varying depth and diameter. These for the most part are confined to the distal and middle thirds of each organ. The evaginations or outpushings arise not only from the main channel of the vesicle itself but in some instances from other evaginations. On the whole this picture is one of an almost tree like growth with the branches of finger like processes proceeding from the middle and distal thirds of each organ and growing for the most part in an upward direction. Each branch or diverticulum ends as a blind pocket, but in every instance its lumen is patent throughout its main cavity and is united with the proximal canal the vesicle proper or with another and larger diverticulum.

From this arrangement it is seen that the drainage is in the main downward and follows the natural path of gravitation. With this anatomical picture it is seen that in order to obtain effectual drainage by surgical intervention multiple incisions are necessary and these for the most part should be along the middle portion of the organ and particular

ly at the apex or tip of each vesicle where angulation with an anatomical tendency to pocket formation is great.

In addition to the diverticula or finger like processes mentioned above there are many cup like evaginations or depressions which have been termed sacculi. These arise from the walls of the various pouches and also from the vesicle itself and add greatly to the irregular and ragged contour of each organ yet present no added consideration from the standpoint of drainage because of their very shallow character.

A brief resume of the embryological development of the seminal vesicle is also given.

H A FOWLER

Dillon J R. Seminal Vesiculotomy in the Treatment of Gonorrhoeal Rheumatism. *Calif St J Med* 1918 LXI 485

Dillon gives in detail the histories of ten cases of seminal vesiculotomy. He considers only those cases having frank neisserian histories and arthritic and other systemic manifestations dependent upon focal infections in these organs which could not be overcome by the usual non operative methods of treatment.

The author says that when one considers the anatomy and realizes that less than 4 per cent of vesicles have straight tubes, 96 per cent having tubes of varying lengths and capacities due to twists and diverticula it is understood that the chances of spontaneous cure are very slight and that resolution by natural drainage is mechanically impossible.

The operative results have been most brilliant. The peri articular lesions improve much more rapidly than do intra articular lesions. The gonococcus is apparently the original invading micro organism but it is shortly joined and probably supplanted by a variety of pyogenic micro organisms. The gonococcus undergoes mutation within the vesicles depending upon the alterations in the environment and may then show selective tissue affinity. The author states that the vesicle may be only part of the trouble the prostate and the urethra may be important in the production of local or systemic symptoms and the results of drainage may be disappointing unless the prostate and urethra receive proper attention.

The seminal vesicles and testes are interdependent and form with the prostate a procreative triad essential to posterity for this reason Dillon says the seminal vesicles should not be totally excised. More satisfactory results can be obtained by slitting the vesicles longitudinally and gently curetting them.

In conclusion the author says

1 Seminal vesiculotomy appears to be justifiable and indicated in cases of gonorrhoeal arthritis which have failed to show a reasonable improvement after the acute and subacute urethral conditions have cleared by the usual methods of treatment.

2 In five cases there was no impairment in the sexual function.

3 The bacteriological etiology was rather in definite and unsatisfactory

4 The clinical results of the operation were satisfactory and much appreciated by the patients
Lours Gross

Stewart F Postatectomy III s M J 98
v 63

The paper is devoted to a consideration of the importance of a thorough preparation of the patient for operation and the necessity for careful and painstaking after treatment. Emphasis is placed upon the necessity for a careful examination to determine the patient's condition before operation, which serve as a guide as to the character and amount of preliminary preparation required.

The operation is a very emergency one and should be undertaken only after the patient has been put in the best possible condition by appropriate preoperative treatment. The author believes the two stage operation in all cases is following after a better result than the patient.

The importance of preliminary preparation of the detail of after treatment is indicated by the following to the author: the greatest danger in hemorrhage. This is controlled by packing the urethra with the bags devised for this purpose. Appropriate measures to be used in the complication such as suppression of urine, shock, abdominal distention, etc., are briefly considered.
H. A. Go. R.

Lowsley O S Surgical Pathology of the Human Prostate Gland I S G L H 98 L U
399

Lowsley's book on the prostate gland is well and favorably known that anything to write on this subject will be read with interest and profit. The discussion of the surgical pathological conditions of the prostate gland is introduced by a brief review of the embryology and anatomy of the organ. The following surgical conditions are then considered in the order named: acute prostatitis, chronic prostatitis, tuberculous syphilis, prostatic carcinoma, sarcoma, and prostatic calculi.

The author does not lend itself to a detailed abstract and should be consulted in the original.
H. A. F. V. L.

Gardner J A The Silent Prostate J I M
I 98 LX 1636

Gardner discusses the various types of obstructing prostate and the symptomatology associated with each.

He points out that the real danger of the obstruction to the outflow of urine lies in the back pressure produced upon the kidneys. These organs are generally infected either when the patient presents himself for treatment or soon after drainage of the bladder is established. The renal function at first slowly recovers itself after drainage is established. If infection is already present or if it occurs before

prostatectomy the patient acquires an immunity to further infection which is a factor in his favor.

Gardner lays much stress on the value of the two stage operation and has had 11 consecutive cases without a death. He goes into the details of his operative procedure.

His method is to have a functional test made when the patient first enters the hospital and he is guided to a certain extent as to the time of performing the second operation by the improvement in this functional test. The patient who excretes only from 5 to 10 per cent during the first seventy minutes is a poor operative risk. On the other hand when they excrete from 40 to 50 per cent they are considered good operative risks. This rule is not hard and fast, however, because patients have been operated upon successfully who excreted but 10 per cent during the first period of seventy minutes.

The test is carried on for two periods of seventy and fifty minutes respectively. The excretion is frequently slow and the greater portion of the day may be passed in the second period. The phthalein test is not used as the scale index to the surgical risk but the general condition of the patient at the conclusion. As the patient improves under elimination in hot baths and bowel washes and when the urine is scanty by the forcing of fluids, his functional test also improves. Following the primary cystotomy the functional test frequently makes a marked drop and then after a day or so begins to improve again, demonstrating the advantage of dividing the shock into two parts.

It has been Gardner's practice the day after a patient enters the hospital to perform the primary suprapubic cystostomy under infiltration anesthesia with procaine. The patient is given from one sixth to one third of a grain of pantopon (pantopium hydrochloricum) an hour before the operation. Because of the necessity of anesthetizing each year the primary operation occupies a longer time than if the patient is under general anesthesia. But the patient is not suffering from shock, and there is a chance to prepare the tract for the second operation, taking care to open the bladder as high up as possible. At this time the prostate may be examined and cystoscopic findings checked up. A large mushroom catheter is placed in the suprapubic wound for drainage and a purse string suture makes a tight joint. The fascia and skin are sewed up in layers.

Two days after the operation the patient is out of bed. The elderly men do not do well lying down and they feel they have made progress because they are able to be up and around. The mornings are occupied with elimination treatment of baths and bowel washes while during the afternoons the patient is up and walking. As the general constitution improves incidentally, his phenol sulphophthalein output is improved and he is prepared for the second operation.

At the time of the second operation a general anesthesia of ten minutes suffices to stretch up the

original opening and lift out the adenomatous prostate. The Hagner bag control the scant hemorrhage and a large drainage tube of the Marion type is used in the suprapubic wound. The bag and the tubes are removed at the end of forty eight hours. The bottle pump designed by Bethune is then used. The wound is kept dry by this method and heals very rapidly. Usually after a week, s use the opening is so small that the catheter attached to the pump may be removed and the wound heals spontaneously. An indwelling catheter placed in the urethra for a few days assists the final healing. The patient sits up in bed the second day and is permitted to get out of bed the following day. It requires from three to four weeks for the average suprapubic wound to heal.

One of the very important adjuncts to the treatment of these cases is the service of a good nurse, one who has been thoroughly trained in the care of these patients. They are able to do much to help them both mentally and physically.

An investigation recently made by Thomas of the operative reports of 6 representative general hospitals in Pennsylvania and the neighboring states revealed the alarming statistics of 2.5 per cent mortality as the result of 148 prostatectomies made during the year. This is a startling comparison to the mortality rate of 4.33 per cent for 1375 prostatectomies by eight of the world's foremost genito-urinary surgeons.

Young has reported one series of 128 prostatectomies without a death and the author has completed a series of 112 unselected cases without a death. This very marked difference in statistics is caused he thinks by the attention to detail given by urologists. J D BARNEY

Quinby W C. The Treatment of Genital Tuberculosis in the Male. *J Am M Ass* 1918 lxxi 1790

The problem of the treatment of this condition is thus tersely stated by the author. For the successful treatment of any surgical ailment an exact knowledge of its pathology and mode of invading the various tissues is important. Such exact knowledge is lacking in the case of tuberculosis of the male genitalia, particularly as to the structures primarily involved.

There are two opinions at the present time, the majority hold that the epididymis is the first structure involved, a smaller number believe that the disease begins its genital invasion in the prostate, spreading thence to the vesicles and the epididymis. This question is of much more than mere academic importance as the eradication of the primary focus is essential to a cure in most cases.

Epididymectomy has been widely employed in accordance with the opinion of the majority. While good results have been obtained, the attempt to cure genital tuberculosis by epididymectomy leaves much to be desired. Keyes is quoted to the effect that relapse on the opposite side almost inevitably

occurs. Barney finds the opposite side attacked in over one half the cases within a year or two of involvement of the first side.

These results are difficult to explain if it is assumed that the primary focus is in the epididymis, but are easily explained if the prostate and vesicle are considered the first point of attack.

In what percentage of cases of tuberculosis of the epididymis are the prostate and vesicle involved? Two sources of evidence are available as a basis for an answer: (1) necropsy findings and (2) clinical examination of the prostate and vesicle. The evidence from these two sources shows that in an overwhelming majority of cases the tuberculosis is found to involve the whole genital tract. The author believes that final conclusive evidence must be found in the pathology of the living. As a contribution to this solution of the question he details the results obtained in seven cases in which the entire tract was removed on one side, employing the technique described by Young in *SURGERY GYNECOLOGY AND OBSTETRICS* 1918 xxvi 373. A detailed history of each case is given.

The evidence obtained in this small series of cases is that in no case were the structures central to the epididymis found to be free from tuberculosis. Another interesting case in this connection came under observation in which the tuberculous process was confined to the prostate, the epididymis showing no abnormality.

The average age of these seven patients was twenty eight years. Four were single and three were married. The duration of the disease from onset to the time of operation averaged about three months, except in one case in which it was two years and nine months. Rectal examination showed the prostate and vesicle involved in two cases, the vesicle only in three cases, while in two the examination was entirely negative. The urine contained pus in three cases, in four it was normal. In no case was renal or bladder involvement demonstrated. Five cases had a discharging sinus in the scrotum before operation.

Six patients were clinically cured. One patient had an extension of the disease to the other epididymis, which was operated upon two months later and cured. The average time since operation is thirteen months. H A FOWLER

MISCELLANEOUS

Keane W E. Extravasation of Urine. *J Mich St M Soc* 1918 xii 429

Because of the destructive ravages caused by extravasation of urine, its very high mortality and the fact that this condition is not uncommon, Keane reports the histories of a few of his cases and offers some suggestions as to their care.

He says that extravasation of urine does its damage as a rule by pressure and mechanical irritation, which is followed by infection and necrosis and delays the untoward symptoms until sepsis

appears several days or even weeks after the injury and the original rupture is healed. He cites two cases as examples and suggests that if the patient is seen early and the tear located repair should be made at once if the urine is clean but particular care should be exercised to clean out what urine has escaped to the surrounding tissues. Gutta serena drainage should be left in from two to three days. External urethrotomy should be done if the urethra is torn and introducing catheter left in the urethra for the four days. If the cases are seen late and sepsis is already present the choice is only for complete drainage of the damaged and gangrenous tissue.

The author says that in some instances there may be no stricture or the opening if it exists is very slight. He illustrates this by detailing a case in his series where the meatus was of the pinpoint variety yet the extrusion was so extensive and destruction so great that both testicles were exposed.

The author advises that care should be taken to inspect the perineum in all patients who are strutured and have partial retention and his own symptoms of sudden complete retention accompanied by rapid swelling of the perineum and scrotum.

If resort must be made to perineal aspiration, Keane advises the use of a very small calibrated needle and follow with a very fine hook with a radical operation for drainage of the bladder. He quotes Keyes that tumorous incision of the pectus dath isarrant and urge that the tissues should be quickly freed of all pus, washed well with 1000 bichloride and the necrotic tissues cut away at once.

The destroyed scrotum of scrotum completely removed. The finger should be introduced into any pocket that burrows and all septic material removed as fully as possible. He details upon the necessity of frequent dressing. He uses permanganate of potash 1000 for irrigation and wet dressing of the skin solution of creolin disinfectant. L. Gross

Kirmisson. Genito Urinary Tuberculosis is in Chances
(De la tuberculose génito-urinaire)
R. G. de la tuberculose génito-urinaire. 98

A boy of fifteen had hypospadias and ectopic testicle on the left side on the right side there were all the signs of a tuberculosis of the testicle and epididymis. The boy was operated upon the suprapubic cavity on the right being drained. A few months later the patient again came to the hospital showing an enormous swelling of the left scrotum and inguinal region. The skin was red and adherent and fluctuation was evident. On the right side previously operated upon there was a fistula with abundant suppuration. Rectal palpation showed that on the left side the prostate was greatly swollen as well as the fundus of the bladder. There was in fact an extensive invasion of the genito-

urinary region including the prostate seminal vesicle deferent canal and base of the bladder. Reaction for tuberculosis was positive.

While an ectopic testicle is often considered to be the cause of malignant degeneration Kirmisson does not think that it can be responsible for the rapid spread of the tuberculosis from the right to the left side in this case.

Genital tuberculosis in the child while not frequent cannot be considered as rare. Felizet in his series during ten years found 38 cases. Hutinel in his hospital service in a space of nine months observed 9 cases. Most authors agree that it more usually shows between the ages of five and seven years. In children the lesion is less frequently bilateral than in adults and the left side is more usually the site. In adults genital tuberculosis is especially epididymal in children the testicle and epididymis are more usually attacked by extension from the prostate and seminal vesicles, very rare. Two forms may thus be distinguished: pure genital tuberculosis and congenito urinary tuberculosis.

The evolution is often acute or superacute. In a general way the prognosis is favorable. There is a tendency to recovery by fibrous transformation especially in children but not a few succumb either to pulmonary tuberculosis meningitis or peritoneal tuberculosis. The latter may be connected with the persistence of a vaginoperitoneal canal.

In treatment Kirmisson does not approve of castration unless there is almost total destruction of the gland by the suppurative process. Conservative treatment should be tried. This according to the site of the lesion may be either compression or puncture of the abscess with iodoform injections or the use of the thermocautery. The latter has given good results but success cannot be expected in all cases.

The actual case reported is a very unusual and unfavorable type and the prognosis in this case with its persistent vaginoperitoneal canal points to tubercular peritonitis and death. W. A. B. E. A.

Watson on the Chemical Identification of the Methods for Demonstrating Tubercle Bacilli in the Urine
A. J. M. S. 918 cl. 636

Watson gives in detail the various procedures for demonstrating tubercle bacilli in the urine and says that the method which requires the fewest laboratory reagents consumes less time and gives a higher percentage of positive results is the one which will be used eventually.

His method is as follows:

Irrigate the glans penis and urethra with sterile water. This eliminates the smegma bacillus and other extraneous organisms.

2. The patient then voids in three glasses. The last is a conical shaped sedimenting glass of 50 ccm capacity and fits in an ordinary high powered electric centrifuge.

3. The specimen is centrifuged for five minutes at moderate speed. If there is much sediment 5

ccm of antiform is added and the specimen is thoroughly stirred for several minutes with a sterile glass rod until a perfectly homogeneous mass is obtained. If there is very little sediment it is not advisable to use antiform. Some definite macroscopic sediment is highly desirable for it acts as a fixative and facilitates focusing in searching for organisms.

4. The entire specimen is then subjected to a second centrifugalization at high speed for thirty to forty five minutes.

5. The supernatant urine is then decanted and the sediment at the bottom or apex of the cone is used for preparing three glass slides.

6. The slides are allowed to dry in the air and fixed in a Bunsen flame.

7. If the smears appear thick to the eye the slides are placed in 5 per cent acid (HCl) alcohol for two minutes. This procedure dissolves the urinary salts which if stained by the fuchsin are often confusing after which they are again fixed in the Bunsen flame.

8. The slides are then stained in carbol fuchsin for ten minutes. The entire slide is submerged in the stain and heat is applied until the solution steams. The slides are then washed in running water and placed in 2 per cent acid (HCl) alcohol

until completely decolorized. They are then counterstained in Loeffler's methylene blue.

The author mentions an important point suggested by Churchman that if negative results are obtained in a specimen from a suspected case of vesical tuberculosis a thorough irrigation of the bladder with moderate distention and careful examination of the bladder washings should be carried out. An ulcer in the vertex or high on the anterior wall may thus shed organisms into the irrigating fluid when the urine is negative.

If these methods yield no results resort may be had to animal experimentation. By mechanically injuring the inguinal lymph glands in guinea pigs previous to inoculation and then injecting 1 ccm of urine subcutaneously in the inguinal region the time can be reduced to from nine to eleven days. Morton reduces the time of demonstration of tubercular lesions by inoculation of roentgen rayed guinea pigs.

Notwithstanding the use of all laboratory methods Watson says it is not always possible to demonstrate the presence of tubercle bacilli. The guinea pig test is not infallible and occasionally the organisms may be demonstrated by centrifugalization and staining when the guinea pig test is negative.

LOUIS GROSS

SURGERY OF THE EYE AND EAR

EYE

Davis A E Repo t of Tumor Orbital Tumor 1 J
Ophth 9 8 8 8

Case 1 was an endothelioma affecting the orbit and frontal bone. The swelling of bone like hardness and extended over the right eye from bit to hair line.

Through an incision just below the inner corner of the orbit the lacrimal gland and part of the right eye were removed pathologically examined finding the tumor to be an endothelioma. A circular incision of the orbit and incision of the frontal bone together with the meninges were removed.

There was no sign of bony invasion. The patient was metry of the tumor side and the patient had no ill effects from the operation. The right eye was left alone before operation.

Case 2 as a recurrent tumor of the orbit originally removed at the age of eight by the Koenig procedure. The diagnosis being confirmed as acoma. Seven years later prominence of the eye again occurred and an enucleation of the orbit was done. The tumor was found to be a myeloma. It is an interesting point in the case that the retinal circulation was maintained in the eye after the first operation and that a glaucoma should succeed as acoma.

Jackson E Permanent Vascular Changes Following Injuries to the Eye 4m J *Ophth* 9 8
776

The case of severe injury to the eye as reported the nutrition remaining good here and there being no obstacle to ophthalmoscopic study of the late result.

Case 1 as struck in the right eye by a chip of wood thirty-nine years previously. The optic disc was grayish white devoid of small vessels and the whole central region of the choroid showed complete absence of retinal pigment and choriocapillaries. The striking thing was the almost complete disappearance of the retinal and choroidal vessels with absence of evidence of serious intraocular inflammation.

The condition seems best explained by the hypothesis of injury to the vessels back of the eyeball causing complete thrombotic obstruction in the area of distribution of the posterior ciliary arteries with preservation of the circulation of the anterior ciliary arteries.

In similar cases almost invariably this condition has been confined to quite limited portions of the fundus and in case of such extensive vascular change with so little evidence of other disease in the eye following trauma seems to have been recorded.

Case 2 had been injured by a pointed stick at the age of seven and presented evidences of choroidal sclerosis in small areas and obliteration of some vessels. What test results showed behind the retina vessels such as would be likely to follow extensive hemorrhage and with them were associated masses and atrophies that pointed to inflammatory reaction.

In case 3 the eye had been torn out of the socket but replaced. The region of the optic disc was occupied by a novel bluish white area with brownish black pigment patches near and the margin and to the temporal side of the disc was a crescentic area presenting the usual appearances of rupture of the choroid. This must be regarded as an avulsion of the optic nerve partial or complete and the author divides this condition dividing the cases into two groups: those in which injury and hemorrhage have been great so to preclude ophthalmoscopic examination and a smaller group in which examination was possible.

Similar cases are cited and the conditions described are illustrated in a colored plate.

S S HOLT

Lewing A L Posterior Scleral Trephining for Acute Glaucoma 1 J 1 1 1 1 19 8 1
96

The author describes in detail his treatment in a case of glaucoma in a woman aged fifty-seven by posterior scleral trephining stating that the material offered only a study in the intricate problem of glaucoma.

The history of the case began July 18 1901 with tension in the eye 55 vision 8/150 and the usual findings in glaucoma. July 5 there was no evidence of permanent improvement through therapeutic measures which were effective in clearing the cornea and media.

A posterior scleral trephining was performed and a second trephining also posterior each of which were followed by secondary operation for removal of scar formation within the trephined wound and other procedure to establish drainage by the posterior route.

The following results on his part the author comments are quoted from the original article.

1. The removal of vitreous in such quantity that the tension of the eye brought far below normal is no more a cure for glaucoma than is the removal of the lens.

Drainage may be established by any of the vitreous chambers.

3. A trephined wound in the sclera closed by needle and suture in the same manner as a trephined wound at the sclerocorneal margin.

4 A trephined wound of the sclera in glaucoma is not a more dangerous wound than a wound in the sclerocorneal margin

5 The clouding of the cornea and vitreous and the arterial glaucomatous pulsations on the disk may be instantly relieved by drainage from the vitreous with immediate restoration of vision

6 The full feeling and the pain of acute glaucoma are relieved by sclerocorneal trephining even though the choroid is not disturbed and there is no apparent lowering of the tension

7 The lens is not affected by the operation

8 Miotics are of as great value following the operation as before it

9 A painful glaucomatous eye will become comfortable after postocular scleral trephining without visible operative defect and without material lowering of tension

J J HOMPER

Hansell H F Successful Extraction of an Opaque and Dislocated Crystalline Lens *N Y M J* 1918 *CVIII* 1120

The patient a woman of forty five gave no history of injury and examination did not show the iris to be tremulous or disclose other signs of luxation A minus glass of 10 D was worn Both lenses were diffusely and uniformly opaque and on doing a preliminary iridectomy vitreous presented in the wound which was the first intimation that the lens was not in its place

Several weeks later the lens was extracted a large conjunctival flap being made before making the limbus incision through which the lens was removed in its capsule by the wire loop

The author lays stress on the conjunctival flap and states that it must be dissected far back quite up to the fornix that the silk sutures must be in place and loosely tied and unless the flap is brought exactly into position it may force the lips of the corneal wound apart

S S HOWE

Allport F Operation for Senile Cataract *N Y M J* 1918 *CVIII* 845

This article is a collection of personal experiences in cataract operating and is neither dictatorial nor exhaustive

The author operates upon one eye at a time Patients are in the hospital twenty four hours before operation for the purpose of preparing the eye getting accustomed to the surroundings and the administering of a laxative and the prescribing of a careful diet An urinalysis and other examinations are made The face lashes etc are thoroughly cleaned the eye irrigated and bichloride ointment massaged into the eye Over this a bandage is placed This is done several times before the operation

Atropine is used If possible the operation is performed on the bed or in the patient's bedroom but if performed in an operating room the patient should be moved as little as possible after the operation

Allport wears tight fitting rough rubber gloves

and illuminates the eye brilliantly with a condensed hand lamp

The patient should be quietly informed what is being done from time to time and should not be encouraged to talk All water used should be warm and should not be dropped from a distance as it startles the patient and makes him jump

Allport emphatically believes in a preliminary iridectomy After the corneal incision is made a holocaine and cocaine solution is dropped on the incision and a little of it is allowed to get into the anterior chamber this deadens sensibility and insures ocular quietude during the remainder of the operation

Allport uses a lid elevator instead of a speculum as there is less likelihood of pressure upon the eye ball during the operation and the consequent liability of escape of vitreous

After the lens has been delivered all possible remaining lens substance that can be removed with safety should be milked out The Allport anterior chamber irrigator should then wash out all possible lens substance remaining This irrigator consists of a hand bag about a foot of rubber tubing and a gold point shaped somewhat like a large strabismus hook flattened This point serves both as an irrigator and as a spatula Atropine and bichloride ointment now placed in the eye and a triangular adhesive plaster bandage applied over both eyes over which an aluminum shield is strapped over the eyes by adhesive straps

Allport administers a chloral and bromide mixture at bed time for a night or two The hands are gently tied with a bandaged cloth to the bed for a few days and a day nurse and a night nurse are engaged if possible

The eye is not disturbed unless necessary for about three days

Thompson W R The Rational Etiology and Satisfactory Treatment of Dacryocystitis *J Am M Ass* 1918 *LXI* 1727

The author presents a new operative procedure for the removal of obstruction to the normal drainage of the lachrymal sac and the remedy for the consequent symptoms and pathology of such obstruction The operation is based on his theory of the etiology of lachrymal duct obstruction namely that it is due to a retained foreign body in the nasal duct He gives the following reasons for such retention

1 The duct must carry solid material as well as fluids

It has no ciliated epithelium to assist in the passage of solids

3 The mucous membrane lining is thrown into folds resembling valves which would tend to hold solid material

On this anatomical basis he believes it reasonable to suppose that the retention of foreign matter is likely which in time is increased in size by the deposition of salts from tears and serum

He points out that the sequence of symptoms and

pathology following stricture of the nasal duct beginning with epiphora and going on to pus formation or mucocele which could be expected as the result of the presence of a foreign body in the duct with its irresistible tendency to inflammation ulceration and accretion

After experiencing the usual failures treatment of obstruction by probes he came to the conclusion that it would be better to remove the stricture which he does by the use of Burk's flexible wire ear curette of different sizes. These are passed to the sac and nasal duct after slitting the caliculus in the usual way. Care being taken to make the opening into the sac large enough to admit easily the longest sized curette.

Four cases are reported as given which substantiate the author's contention of the efficacy of his procedure. J. J. Hoxie

EAR

Graham H. B. Osteosclerosis of the Temporal Bone in Chronic Suppuration. *L. G. P.* 9 8 2

Graham believes contrary to the one held by Cheate of London that osteosclerosis of the temporal bone is the result of chronic suppuration rather than a cause.

Anteroposterior trepanning is recommended in the condition. Or. M. Rott

Kyl J. J. The Modern Mastoid Operation. *L. G. P.* 19 8 8

The author condemns the packing of the mastoid with gauze and instead advocates the simple drainage and irrigation by means of rubber tubing with the ethyl chloride.

The middle ear becomes dry as a rule twenty-four hours after the myringotomy.

The posterior bone cavity is left in five days after operation at which time the tube may be withdrawn.

Healing more rapid than by any other form of dressing.

In the procedure of the lateral sinus and drainage this method is the most logical and satisfactory way of draining.

An abscess in a mastoid procedure should be removed as far as possible by irrigation with sterile solution and flushed with formalin solution preferably twice a day.

The result of long suppuration and slow healing is usually due to packing with gauze and lack of aeration. Or. M. Rott

Bowers W. C. Answer to Opponents of the Radical Mastoid Operation. *L. G. P.* 19 8 1 790

After answering in great detail the various objections against the radical mastoid operation and citing his technique the author tabulates his results in 112 cases and offers the following conclusions:

1 Many men are performing radical mastoid operations without reasonable proficiency.

Many radical mastoid operations are performed when not indicated.

3 Too little consideration is often given to preservation of hearing.

4 Many cavities are not properly cared for either by the surgeon or by the patient.

5 It is possible to get dry cavities and improved hearing and these results are attainable in most cases.

6 The operation is not dangerous and complications are usually avoidable.

The condition calling for operation is usually a very dangerous one and is too frequently dealt with lightly. Or. M. Rott

Yorke C. Ablation of the Labyrinth in Case with Ménière's Disease. *B. M. J.* 9 8 420

It has been customary to designate under the name Meniere's disease a sudden hæmorrhage into the labyrinth causing a violent onset of deafness, tinnitus, vertigo, nausea and vomiting. It is known however that a similar combination of symptoms may result from conditions other than hæmorrhage, i.e. infective processes, vascular disturbance, etc.

In a case described by the author the patient a man aged fifty-one years showed advanced bilateral labyrinth disease with Meniere's paroxysm. The symptoms were more pronounced on the left side. There was no infective disease. Operation consisted of ablation of the left labyrinth. It was followed by the typical clinical picture of traumatic destruction of the labyrinth.

A year and a half has since passed and during that time the patient has not vomited nor experienced dizziness. The author considers that the patient is entirely cured of the Meniere attacks and that the operation has been entirely successful.

W. A. B. 2A

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Moore T W The Present Status of the Operative Treatment of Chronic Frontal Sinusitis *J Am Med Ass* 1938 111:1811

The author states that most cases can be cured by establishing ventilation and drainage preferably by the Isthmop technique. Obliteration of the sinus is only indicated where there has been extensive necrosis of the bony wall.

A short historical sketch precedes the discussion.
Otto M. Rott

THROAT

Pearson W W Fracture of the Hyoid Bone *J Iowa St Med Soc* 1918 11:395

A man sixty-four years of age while eating meat was seized with a fit of coughing immediately he had difficulty in swallowing and supposed that a piece of bone from the meat had lodged in the throat.

During the next five days he took practically no food or drink. He was then taken to the author's office where an examination with the broncoscope and the oesophagoscope revealed nothing abnormal while in the position for the latter examination a glance at the neck revealed a lack of symmetry which suggested an X-ray picture. The latter revealed a fracture of the greater wing of the hyoid.

The patient's neck was strapped, he returned home, was able to eat and made an uneventful recovery.

The author refers to the literature of the subject and mentions possible complications and different types of treatment that have been employed.

MOUTH

Black A D Roentgenographic Studies of Tissues Involved in Chronic Mouth Infections *J Am Med Ass* 1918 11:19

Black reports a total of 6,000 films divided into two types: (1) those that begin with inflammation of the gingiva and progress along the side of the root toward the apex known as chronic suppurative periodontitis; (2) those which subsequent to the death of the pulp of the tooth cause a destruction of the bone at about the apex of the root known as chronic alveolar abscess. He found chronic infection about the teeth in the following proportions: 57 per cent between the ages of twenty and twenty-four; 64 per cent between the ages of twenty-five and twenty-nine; 88 per cent between the ages of thirty and thirty-nine; 90 per cent between the ages

of forty and forty-nine and 98 per cent past the age of fifty.

The purpose of tabulating infection about the teeth was to obtain the best possible information as to the physical condition of persons manifesting infection involving the teeth. Inquiry was made as to enlarged finger joints, muscles or joints which were occasionally painful, the condition of the nose and throat, inflammation of the eyes, etc. Of the 501 who were questioned, 363 reported being entirely negative as to secondary systemic disorders; 72 complained of occasional muscular or joint symptoms; and 66 reported well-defined cases of arthritis, nephritis, appendicitis, etc.

The effect of the study of these cases is to bring dentists to the realization that it is their positive duty to free the mouths of patients from infection even though this requires the extraction of a number of teeth.
M N FEDERSPIEL

Bulkley L D Cancer of the Oral Cavity *De tal Cosmos* 1918 1:774

Bulkley calls attention to the great responsibility of the dentist concerning cancer of the oral cavity. For it is he of all others who is likely to see the beginning of the disease.

Bulkley reports that in the United States registration deaths from cancer of the oral cavity have increased more than those in any other locality. The importance of early and accurate differential diagnosis in the oral cavity should be given due consideration, i.e., syphilis, aphthous stomatitis, leucoplakia, tubercular lesions, etc. The exciting causes of cancer of the oral cavity are irritating, rough, broken or decayed teeth, ill-fitting bridges, plates, tobacco, syphilis, and alcohol.
M N FEDERSPIEL

Federspiel M N Some Observations on the Treatment of Cleft Palate *Am J Surg* 1918 11:118

Federspiel classifies the degrees of cleft palate as follows:

1. The cleft involves the hard and soft palate, the alveolar process and the lip.

2. The cleft involves the hard and soft palate only, having the anterior alveolar process and the lip normal.

3. The cleft involves only a portion of the hard palate and all of the soft palate.

4. The cleft involves all of the soft palate only.

5. The cleft is a mere bifurcation of the uvula.

There have been theories as to the etiology of cleft palate. The author believes that heredity is an important factor, calling attention to the frequency of the condition in certain families.

The treatment of cleft palate is surgical, but it

may be surgical and mechanical or mechanical only. Some cases do well with only mechanical treatment. The surgical repair of congenital clefts of the palate and alveolar process depends largely upon the degree of deformity, the age of the patient, and whether the patient has sufficient vitality and resistance to withstand the shock of the operation or the complications which may arise.

In cases which have a double alveolar cleft with the central position of the os incisivum displaced forward and attached to the tip of the nose, the author usually performs a submucous resection of the vomer by removing a V-shaped section. In other cases, it is only necessary to split the vomer to allow the septum to overlap when the protruding os incisivum is forced backward. If however the os incisivum is undeveloped or at an age when tooth eruption has taken place, it is impossible to follow the above method. In the latter case, he removes the protruding mass and prepares this area to act as a good stump for artificial restoration.

In order to relieve the late alveolar tension in cleft palate operations, the author does a combined uranoplasty and staphyloplasty after the method of Langenbeck. The technique consists of four steps: (1) freeing of mucoperiosteal flaps; (2) freshening the edges of the cleft; (3) placing and tying of sutures; (4) relief of late tension.

This procedure is accomplished by first cutting the mucous membrane along the entire borders of the cleft and separating the soft tissue by periosteal elevators and cutting the tissue loose from the dental surface of the horizontal plate of the palate bone. The hæmorrhage thus produced may be stopped by pressing a gauze sponge against the bleeding surface.

The edges of the cleft are freshened by grasping the uvula on one side with a catch forcep and putting tension on the soft tissues, then with a very sharp thin-bladed knife cutting a thin marginal strip along the entire flap from the uvula to the apex of the cleft. This same procedure is carried out on the opposite side. The freshened surface should be cut square with the flap tissue. Various kinds of suture material are used for holding the pared edges together, such as silk, horse hair, linen, catgut, wire, etc.

In order to prevent the suture material from cutting out and at the same time to relieve the tension as well as to render the palatal tissues inflexible, the author has devised a tension plate made from non-corrosive metal, B.I.B. American gauge 22. In order to fit these plates, it is necessary to make a small incision near the gingival border of the last molar. The incision should be sufficiently long to permit the flange of the plate to enter and lie between the palatal bone and soft tissue. Previous to fitting the plates, it is necessary to pass silver wire (American gauge 24) through the mucoperiosteal flaps and then through the hole in the plates. The ends of the wire are then passed through perforated lead shot and made tense by pulling the wire and crushing the shot after the borders of the flaps can be approximated with tension. When this is done, the denudes the border of the cleft and then places the adapting sutures after the McCurdy method.

He reports three cases operated upon according to his method, with illustrations showing the various steps of the operation and the results.

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INTERNATIONAL ABSTRACT OF SURGERY

MAY 1919

ABSTRACTS OF CURRENT LITERATURE GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Mayo W J Modification of Some Civil Surgical Practices Suggested by the Surgery of the War
South M J 1919 xii 31

The author discusses the lessons to be drawn from the surgical experiences of the great war and their application to the problems of civil surgery.

The first lesson consists in the realization of how much dependence can be placed upon the natural recuperative ability of the young and strong.

The second lesson has resulted in the clear differentiation between a contaminated and an infected wound. The great value of this lesson lies in its relation to the problem of wound drainage. Drainage has been a gradually diminishing practice. In pelvic infections it was learned that cases operated upon during the active stage of infection gave a high death rate while those operated upon in the later stages offered little danger that the infection became sterilized and drainage was unnecessary.

In retrospect the author feels that many times in his experience real danger has resulted from the attempt to drain wounds that were contaminated but not yet infected. Many times has a gauze drain carried down to a damaged loop of bowel resulted in a fistula. Gauze as drainage material is generally to be condemned.

In both military and civil practice the drainage of contaminated wounds that can be cleansed is not only unnecessary but harmful. Where a gauze pack is necessary for the control of venous or capillary hemorrhage the author removes the pack in from twenty four to forty eight hours and closes the wound to prevent entrance of bacteria to the deeper parts. Wounds of the thorax and joints may be similarly treated. The careful excision of contaminated wounds gives a successful primary closure in 90 per cent of cases. And where primary closure has been unpracticable secondary closure after wound sterilization has been equally successful.

The third lesson concerns shock. The author feels that while shock may occur independently of hemorrhage it is not to be discussed without a consideration of hemorrhage actual or potential. Blood loss into dilated capillaries and veins called exæmia by Cannon, acidosis and fat embolism are all to be considered. The differential diagnosis between shock and hemorrhage is readily made.

The cause or causes of shock are not agreed upon but there is unanimity of opinion. The treatment includes (1) checkin of the hemorrhage and immobilization of the injured parts (2) administration of morphia and dry heat elevation of the feet and hot drinks (3) transfusion with blood or 6 per cent acacia in normal salt solution. Citrated blood from a Group IV donor is the most satisfactory method of blood transfusion. The blood may be kept in cold storage for a considerable length of time. The acacia solution forms a very acceptable substitute for blood as its viscosity prevents its passage through the vessel wall and diffusing itself through the tissues as does salt solution. It is harmless and readily prepared.

The fourth lesson is that of anaesthesia. Ether has proved itself the anæsthetic of choice because of its safety and ease of administration. Local anaesthesia has played little role in acute military surgery but in the late reconstructive work in base hospitals has a wide field of usefulness.

J R BUCHBINDER

Scalone I Free Aponeurotic Strips in the Mobilization of Tissues and in the Surgery of Peripheral Nerve Injuries (Il trapiante di lembi aponeurotici liberi per la mobilitazione dei tessuti e nella chirurgia delle lesioni dei nervi periferici)
Chir d orga di nov Bologna 1918 n 497

Free autoplasmic grafting of strips of aponeurosis has been employed by Scalone in the following cases for the reconstruction of the cerebral meninges in cases for the reconstruction of aponeurosis in cases for the reconstruction of tendon sheaths

appliance keeps it in close apposition to the wound and by alternately filling and emptying the apparatus it has been found that in thirty six hours all recesses can be drained of pus.

The rubber appliance is bandaged over the wound. A tube connected with the reservoir contains in the irrigating fluid is attached to one tube on the upper surface of the apparatus and another tube is attached to a second tube which comes off the appliance, this tube leading to a waste pail to catch the returning fluid.

The comfort of the patient is the best guide to the amount of pressure to be employed. For positive pressure the reservoir should be about 12 to 18 inches above the wound and maintained for one hour periods during the day and three to four hour periods during the night. That this fluid finds its way to the remotest crevices has been demonstrated by X-ray. During this phase the outflow tube is clamped.

For negative pressure the inflow tube is clamped and the outflow tube opened. The emptying of the reservoir causes a partial vacuum. The periods of negative pressure are usually fifteen to twenty minutes. The rationale of this treatment depends on the dictum: Where there is pus let it out. This treatment goes further. Where there is pus wash it out and keep it washed out. Any fluid may be used although the authors favor normal saline.

They report a case illustrating this treatment. In a series of 120 cases where the wounds discharged pus for an average of 100 days the average duration of treatment was $7\frac{1}{2}$ days. I. E. BISHKOW.

Picot G. Primary or Very Early Closure of Gun-shot Diaphyseal Fractures (La fermeture primitive ou très précoce des fractures diaphysaires de guerre). *J. de ch.* Par 1918 xv 15.

There is no class of wounds whose treatment is so difficult as those complicated by diaphyseal fractures. Surgeons are divided as regards immediate treatment, some consider that extensive excision of tissues and primary suture is an exceptional procedure which may result in dangerous complications; others hold the opposite view. Hence the method of primary suture of fracture wounds has not become generalized.

The author for some time past has endeavored to generalize the systematic immediate suture of fractures unless formally contra-indicated. The method has been ample excision of contused tissues, clearance of the area, closure and filiform drainage. A bacteriological test of the wound is made six hours later and its result indicates whether the wound is to be re-opened or finally closed and the drain withdrawn.

Picot has treated 93 fracture wounds coming from the evacuation centers, 81 of these have been sutured (8 per cent) with the following results: cicatrized without fistula 65 cases, cicatrized with fistula 10 cases, voluntary disunion 5 cases. There were no deaths.

The men have as a general rule been received within ten to sixteen hours after injury. Disunion was observed most frequently in the femur and fistulae in leg fractures. The recovery obtained after primary closure is a perfect recovery, the cicatrix supple, solid and regular. Osteomyelitic and other complications observed after secondary suture are absent. Recovery after primary suture is infinitely superior to that obtained by secondary suture.

Fifty six of the cases have been followed for a period sufficiently long to study the process of consolidation. It has been observed that consolidation in the case of the lower limb takes a longer time than in the case of fractures in civil life, but the loss of substance and other conditions in these war fractures are very different. Another point which the author has observed is that Delbet's walking apparatus is a necessary and indispensable complement to the primary suture of lower limb fractures.

A study of radiographs shows the following points regarding fractures primarily sutured:

1. A large callus infiltrating into the periosteous parts is never seen. The callus is always limited and similar to cement joining the fractured ends. The appearance is quite dissimilar to that in the case of secondary suture.

2. The bone has a tendency to resume its normal form and direction.

3. While in civil fractures consolidation appears to be effected in two stages—the callus at first large becoming secondarily reduced—in war fractures there appears to be only a single stage, the period of regression not existing.

Further examination of the radiographs shows the author that ossification is effected by proliferation of the soft elements of the bone which ossify all the more rapidly according as the fracture is early mobilized and walking instituted.

W. A. BRENNAN

Piollet A. L. P. Secondary Sutures in War Wounds. *A. I. M. J.* 1919 cix 14.

The established method of treatment of wounds is to excise torn edges and debris and to suture the wound immediately or at some later date. This method was first used by the French surgeons and in both primary suture and delayed primary suture it was successful in about 90 per cent of the cases.

In cases seen when infection has already occurred it is first necessary to clean up the infection for which the Carrel treatment is excellent.

The conditions necessary before a wound should be sutured are first that there be no dead tissue or tissue of low vitality present and no bloody exudate and second that there be no harmful microorganisms present. This is arrived at by clinical observation of the appearance of the wound and a bacteriological examination.

In the technique for secondary suture the superficial wound is closed with loosening of the skin margin if necessary to bring margins together.

In d ep ounds the cicatriv and ound are e cised and the an t mical elations reconstructed as a curately as possible The ounded memb r should be held mmobile and a dry or et s line d ess applied All sutures ar not emoe d until the fourteenth day

Rottenste n G S onday and Lat St lization of Inf cted W ounds by the Carr l M thod
(L té l t é d ett d p l méth de d C l d pl d g e f té) R d
h P 9 8 l S

The ruthor has stud dle value f the Carrel meth d as appli e pe lly to old fected war wound His m thod follo ed in all details that m ployed at Carr l hospital at Compigne The cases t eated incl ded () old f ctures of the long bo es ith oste t d fistul 9 ca () old infected surface ounds 20 cases (3) e traction of e cysted p oject les ca es

The author f ds that the Carrel method applied in the sec ndary and lte treatme t of infected ounds and especially n ost t following ar fractures ap dly checks nfect n n the same way as hen ppl ed prima lly The t eatm nt is be t applied aft ide s g c l t m nt In surface ounds d ounds f the soft parts pid c at rition es lts In c ses of lte e t acti n of encyst d p j c til the Ca el method b ngs about pm v ru n by p e enting the lght ng up of late t nfe t n In fractures t makes possible union nd ap d catr t o

The C l m th d fulfill the th ee duties of a mlt v uge n h s duty to ard the pat e t f rele v suffering a d sho tening the pe od of imm b l t n h duty to ard the st te by d m lting the p od of h sp tal at on and tle am u t f p sion a d h duty to the c untry by se u gth m st rap d reco e y o f th ou l d

W A B

ANÆSTHETICS

M y t H Gen l Anæ th ia by Eti in P di
t is (A é th e g é l p l th h l
f t) P l g 9 8 3

May t reports o th anæsthe as chld en va v m f o m s o f u t n v s l d In t is es he had n se s ac dent eithe dur the pe d of nsth a or the days foll wng

He thinks eth has a great d antage ove chloro f m especially abdom l perat ns Ne ly h lf of h s cases w re ppend t s and in the ther s v e a ly retur f re tal flatu nd no hep t c mpl tions

In v v ne ous chld en there s a t d y to gene al e citat on during the so ty e ht hours follo g tler dm nst uon Only 6 t me was tachy dta bs ved n the 500 anæsthes s In the chld pulmon y congest n and pne mon a to a d the s th o seventh d y are abs lutely unkno n

In the child as in adults ether is contra indicated v hen there are pulmonary lesions or lesions of the face or head also before the age of five or six years for fear of too rapid pulmonary react on The dose is also restricted to hat is absolutely necessary

W A LRENN

Riche Gen ral Anæsthesi by th Spinal Route
itl No calne (L r h sthé g é al a
l c p r l lomb) B l t d d
méd P 9 9 l 85

Riche thinks that general anæsthesia may be induced safely by the spinal route using novocaine instead of cocaine or stovaine hich a e many times mo et c

Riche makes a lo puncture hich avoids puncturing the cord The needle is introduced ; the fr t or second lumbar space After numerous tr als R che finds the necessary dosage to be 1 centigram of novoca ne for each 5 kilos of weight o 14 centigrams for an adult v e ghin 70 kilos He uses the F ench 8 per cent pure novocaine w th out adding strychnine or ad enalin The njectio s m de n lateral decubitus after the withdrawal of o to ccm of the cerebrospinal flu d acc ding to the patient s weight and tension The injection is slo i e centigram per m nute It is necessary to gua d against a too rapid infusion of the anæsthetic n the cerebrospal fluid

In mo e than 000 spinal anæsthesias made s nce 9 4 Riche hnds there were only 50 general anæsthesias becu e le as slo to resort to the use of n voca ne alone General anæsthesia v as used in operations on the head neck tho ax and upp r limb There is no case of de th or alarmng compl c tions but the e as grate or l ss f lure in one tenth of the c ses In almost 3 p r ce t of the c ses there v s some vomiting but not e ough to c use distubance The analges; in olve the h le b dv f m head to foot In the days f llo ng some p t nt have had slght headache and t l b l v mting

The auth t tes that the method is appl cable hen local anæsthesia cannot be employed or v hen ge al anæsthesia by inhalation or reg onal anæsthesia by n f l t on s n h b ted for some reason

W A BÆ

W ight F R Spin l Anæ th l J L c t 19 8
7 4

W ight g e a b ref h tory of spin l anæsthesia call ng attention to the a us dru hich have been u ed It h p n that spinal anæsthesia has a defnit l mited field of usefulness It is to be employ d in ca es requiring major operati n on the lower p rt of the t unk or lower xtremities only when fr m any cau e or condit n of the lungs heat or kidneys it is deemed uns fe t g e a general anæsthetic

When spinal anæsthesia is used the back should be th r oughly te lized over the entire lumbar re g on where punctur ; to be made Steril z tion of

this large field is made necessary by the handling which cannot be avoided in identifying the lumbar vertebrae and locating the point where puncture is to be made. The needle used should be just large enough to let the spinal fluid flow freely through it and just three inches long. It should be inserted between the second and third or the third and fourth lumbar vertebrae and should puncture the skin three fourths of an inch from the middle line and be guided upward and inward passing between the laminae of the vertebrae as far as the subarachnoid space and no farther.

In making the puncture the needle should be held so that the edge splits the fibers of the dura mater. If the needle is passed deep enough to puncture the pia mater only a few drops of spinal fluid can be withdrawn and the anæsthetic introduced remains confined over a small portion of the cord and a limited area of anæsthesia is produced. Through a needle thus introduced eight to twelve cubic centimeters of spinal fluid are withdrawn. In this spinal fluid is dissolved the anæsthetic which is to be used and it is returned to the spinal canal. The author uses one grain of tropococaine.

The area of the body anæsthetized will depend first on the amount of anæsthetic introduced and secondly on the position of the patient when the injection is made. If the patient is placed in a high Trendelenburg position the anæsthesia will ascend as high as the umbilicus or even higher.

The dangers of spinal anæsthesia are three: (1) shock from puncturing the spinal canal; (2) poison from the anæsthetic used; (3) secondary hæmorrhage. Sometimes following the use of tropococaine there is a contraction of all the vessels in the lower part of the body so that when the incision is made the tissues are pale and there is little or no bleeding. This condition is apt to be followed by secondary oozing. If the patient is promptly given a full dose of a thirtieth or twentieth of strychnine sulphate the relaxation of the vessels disappears and there is no more oozing than after an ordinary anæsthetic.

In the author's experience covering 125 cases of spinal anæsthesia he has had only three showing unfavorable effects. All three occurred in men between seventy and eighty years of age on two of whom prostatectomy was performed. One made an uninterrupted recovery after collapse at the operation. The second man fell into a state of collapse as soon as the injection was made but later recovered the operation not being performed. He died suddenly on the street some six months later. The third man died forty eight hours after operation from novocaine poisoning. G. W. HOCHREIN.

Hirschman L. J. The Field of Local Anæsthesia in a War Hospital. *J. Mich. St. M. Soc.* 1919 xviii 12.

The author discusses the advantages of local anæsthesia as found in an army base hospital in France. The following were enumerated: prevention of postanæsthetic complications in lungs and

kidneys; less after pain; fewer wound infections; less handling of tissues; less shock; total time in the operating room is less; the assistance of an anæsthetist is dispensed with; Hospital confinement is minimized.

All types of operations were done: wound excision; wound closure; extraction of foreign bodies; rib resections; rectal operations; herniæ, etc.

The author recommends the administration of a hypnotic before the operation, preferably chloroform or morphine. J. R. BUCHHEIMER.

SURGICAL INSTRUMENTS AND APPARATUS

Moore S. A. Myological Principles: a New Ulnar Splint. *Brit. M. J.* 1919 i 41.

In treating peripheral nerve lesions splints should be applied in such a way that while they prevent over stretching or fatigue of weakened or paralyzed muscles they interfere as little as possible with the motor function of the limb. Splints should be so devised and adjusted that as recovery occurs the weak muscles are free to perform even when in the splints those functions of which they are capable.

The author's splint is made of vulcanized rubber and needs no padding. The splint is first secured to the palmar aspect of the fingers that is the fourth and fifth fingers by a narrow band of adhesive plaster which passes over the back of the proximal phalanges only. It is advisable to protect the back of these phalanges with a thin piece of lint. In applying the splint the fingers are kept flexed at the metacarpophalangeal joints so as to prevent the splints from extending too far upon the palm. A second strip of adhesive is applied over the first and fastened around front to the side of the hand so that extension of the metacarpophalangeal joint is impossible. No muscle is prevented entirely from functioning as there is slight play but no harmful movement can occur.

In a high ulnar nerve case with involvement of the flexor carpi ulnaris an additional splint of the Jones cock up type is applied but to the posterior aspect of the forearm instead of the anterior keeping the wrist palmar flexed. The patient is told never to dorsiflex the wrist never abduct fully the thumb never fully extend the proximal and never flex the mid and distal phalanges. The treatment consists of removing the splint and flexing the wrist in the supinated position. The wrist is alternately flexed and extended and stops short of fatigue as determined by the behavior of the flexor carpi ulnaris.

Full supination is the position from which the final movement is made starting first with the wrist in pronation. The fingers are next exercised the proximal phalanges are moved in flexion and the middle and distal phalanges in extension. After each period of exercise the splints are re-applied. Later adduction and abduction of the fingers are tried.

This method of treatment gives the quickest results and is correct psychologically and myologically. J. J. KURLANDER.

SURGERY OF THE HEAD AND NECK

HEAD

Elliott G. Radium Treatment of Epithelioma of the Lower Lip *Int. J. Surg.* 9: 8

Elliot G. Radium Treatment of Epithelioma of the Lower Lip. The patient is a man, 45 years of age, who has had a growth on the lower lip for several years. The growth is a large, fleshy, and irregular mass, which has increased in size and has become more and more prominent. It has caused considerable disfigurement and has interfered with the patient's ability to eat and speak. The patient has been treated with various methods, but without success. He has now come to me for treatment. I have examined the growth and have found it to be an epithelioma. I have decided to treat it with radium. The treatment has been successful and the growth has disappeared. The patient is now well and is able to eat and speak without difficulty.

The patient is a man, 45 years of age, who has had a growth on the lower lip for several years. The growth is a large, fleshy, and irregular mass, which has increased in size and has become more and more prominent. It has caused considerable disfigurement and has interfered with the patient's ability to eat and speak. The patient has been treated with various methods, but without success. He has now come to me for treatment. I have examined the growth and have found it to be an epithelioma. I have decided to treat it with radium. The treatment has been successful and the growth has disappeared. The patient is now well and is able to eat and speak without difficulty.

Dubouilh W. Treatment of Epithelioma of the Upper Lip *Int. J. Surg.* 9: 8

Dubouilh W. Treatment of Epithelioma of the Upper Lip. The patient is a man, 45 years of age, who has had a growth on the upper lip for several years. The growth is a large, fleshy, and irregular mass, which has increased in size and has become more and more prominent. It has caused considerable disfigurement and has interfered with the patient's ability to eat and speak. The patient has been treated with various methods, but without success. He has now come to me for treatment. I have examined the growth and have found it to be an epithelioma. I have decided to treat it with radium. The treatment has been successful and the growth has disappeared. The patient is now well and is able to eat and speak without difficulty.

The patient is a man, 45 years of age, who has had a growth on the upper lip for several years. The growth is a large, fleshy, and irregular mass, which has increased in size and has become more and more prominent. It has caused considerable disfigurement and has interfered with the patient's ability to eat and speak. The patient has been treated with various methods, but without success. He has now come to me for treatment. I have examined the growth and have found it to be an epithelioma. I have decided to treat it with radium. The treatment has been successful and the growth has disappeared. The patient is now well and is able to eat and speak without difficulty.

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between the nose and mouth. The mouth opens naturally and the patient can talk and eat in the ordinary way. Several photographs show the results of the plastic operations. When last seen the opening in the upper lip had spontaneously closed.

W. A. BRENNAN

Inniss R. Reaction of the Auricle to Temporal Nerve and Its Effect on the Parotid Secretion *L. N. P.* 9: 8

Inniss R. Reaction of the Auricle to Temporal Nerve and Its Effect on the Parotid Secretion. The author reports on the results of his experiments on the reaction of the auricle to the temporal nerve. He found that the auricle reacts to the temporal nerve by increasing the secretion of the parotid gland. This reaction is due to the fact that the auricle is innervated by the temporal nerve. The author has shown that the reaction of the auricle to the temporal nerve is a reflex action. He has also shown that the reaction of the auricle to the temporal nerve is a useful method of increasing the secretion of the parotid gland. The author has used this method in the treatment of patients with parotid gland disease. The results have been very satisfactory.

The author discusses in detail the nervous system of the ear in illustrating the connection of the auricle with the branches governing the parotid secretion. He gives the clinical history of a soldier with a persistent parenchymal parotid fistula of the right lower maxillary region. A vertical incision about 3 cm. in length was made in front of the zygomatic process of the zygomatic bone. This is the same as the incision used in the superotemporal approach. The temporal artery is easily seen beneath the cutaneous incision and beneath this toward the zygomatic process a trap-door vertical segment of the auricle is reflected. The nerve is then easily found by following its branches. It is necessary to dissect all that part of the nerve that traverses the gland. Hence the nerve must be followed to the parotid.

When it is fully exposed the position of the trunk of the nerve is found. It is about 4.5 cm. long and the small secretory branches stimulate the gland. The author has employed it by sectioning the central extremity with the forceps. The secretory canals of some of the parotid ducts on the author's side are a paralytic secretion. It lasts until the denervation of the nerve occurs. The operation is not followed by dryness of the mouth. There is no difficulty either in mastication or in deglutition. The glands furnish sufficient saliva. In the author's case the successful result has been maintained. W. A. BRENNAN

Petit de la Villeon and Jean Salivary Fistulae
(Fistules salivaires) *Bull et mém Soc de chir de*
Par 1918 xlv 1676

The authors report cases of parotid glandular fistula and fistula of Stenon's duct both treated by Morestin's method of complete extirpation of the fistula with the cicatricial block surrounding it and deep suture of the walls. Both cases resulted favorably.

Morestin, commenting on these two cases, reports that up to March 1917 he had collected 60 cases treated by extirpation. He thinks that for glandular fistulae the cutaneous cicatrix should be removed with the fibrous block which extends into the gland. When the fistulous tract is excised the walls of the cavity are carefully approximated and sutured and the wound closed. For fistulae of Stenon's he likewise removes the cicatrix, the fibrous masses around the duct as well as the part of the duct affected, the stump being ligated and buried with reunion as before. Since March 1917 he has treated 5 salivary fistulae in this way. These were mostly war cases. Fifteen were glandular and 7 of Stenon's duct. All cases recovered rapidly. The secretion of fluid definitely stops after a short time.

W. A. BRENNAN

Northcroft G. A Review of a Year's Work at a
Jaw Injuries Center. *Proc Roy Soc Med* 1918
xii Sect Odontol. 7

The total number of cases registered as seen from July 1916 to October 1918 amounts to 554 exclusive of the ordinary dental cases. Of these 7 have died, 58 have been transferred, 398 have been discharged and 91 are still under treatment.

The ratio of mandible to maxilla cases and of mandible to mandible and maxilla cases differs somewhat from earlier figures. It may be remembered that Lindemann gives the figures as 5:1. Former figures were 5 to 1 and 8½ to 1 respectively. Present figures show a proportion of 4½ to 1 and 9½ to 1 which means that there have been more fractures of the maxilla and fewer of both mandible and maxilla.

Only one out of the 7 deaths which occurred was in any way directly connected with the treatment. This man died of septic pneumonia under general anesthesia, several septic roots were removed in order to clear up the very foul condition of his mouth. It is an open question whether he would not have succumbed in any case.

Of the 398 men now discharged, 40 suffered from fractured teeth and alveolar process only, 32 have been treated for old standing trismus and other jaw conditions and it is difficult to gather whether some of these cases had had a breach of continuity or not. In 1 case there was no jaw injury.

Seventeen out of the remaining 305 were discharged without obtaining bony union. The 17 cases were supplied with mechanical device greatly ameliorating the patients' unfortunate condition and enabling them to exist on a modified diet.

Twenty bone grafts have been inserted. It is too early as yet to speak of the results of all the bone grafts but they promise well and 50 per cent have already been discharged with firm and efficient bony union.

It is interesting to note that earlier figures proved that 10 per cent of the cases failed to obtain union without resorting to bone grafting. The present series increase to 12 per cent, this being probably due to the severity of several of the cases cared for.

In some of the ununited cases the jaw was in such a bad condition as to render the successful insertion of a bone graft so doubtful that even the daring of the surgeons had to be tempered with caution. Other cases were complicated by the general physical condition of the patient and in others the patient refused operation.

The time factor is a very difficult one to estimate; an average of four weeks may be deducted from the total weeks in the hospital in order to arrive at a general idea of the length of time these cases take. Many cases are not discharged from the Jaw Injuries Department until after plastics have been completed in case any alterations have to be made to their dentures. This greatly increases the average time a man with a fractured jaw remains in the hospital. On the whole, one obtains the impression that the ordinary gunshot wound takes somewhat longer to heal than a civil fracture and averages from eight to twelve weeks. Patience on the part of the patient and operator is rewarded however by excellent results after much longer periods.

Billington W. Parrott A. H. and Round H.
Bone Grafting in Gunshot Fractures of the
Jaw. *Brit M J* 1918 ii 679

A technique embodying the use of autogenous bone grafts in the repair of gunshot fractures of the lower jaw is herein presented.

Three conditions are necessary for success: (1) osseous union, (2) functional occlusion, (3) avoidance of disfigurement. Good osseous union is necessary for mastication and must be obtained even if it causes deformity. Where there is a defect greater than half an inch, osseous union if obtained without a bone graft will result in deformity.

Hitherto the operation has been so difficult and so unsuccessful that the bone graft has not been used much. On the other hand, no other method is so successful in preventing deformity. The operation is performed in two stages. The first consists in getting rid of the sepsis that is always present and is most persistent. The wound is explored, loose fragments of bone removed and infected tissue excised. The fragments are placed as nearly as possible in their normal relations. Splints are used so as to maintain them.

In from four to six weeks after all wounds inside and outside are completely healed, the bone grafting is done. Two weeks previous to this step the splints are removed to prevent sepsis and to avoid the dangers of postoperative vomiting.

A curved incision beginning above the line of the lower jaw and well back of the fractured ends is made. The incision is carried down the neck convexity below. Each end of bone is exposed for an inch back of the gap. Care must be taken to avoid cutting into the mouth. Excess of scar tissue may make this difficult and may also endanger the life of the graft.

The bone ends are trimmed and bevelled. The crest of the ilium is now exposed from the anterior superior spine backward and a graft removed with a Horsley's band saw. The ilium is used because its crest offers a curve practically equal to that of the jaw and the graft needs no modelling.

A broad line of contact is obtained. The fragments are not fixed by any foreign body, as such means always interfere with healing. Position is maintained by suturing the soft tissue snugly over the graft. This also improves the nutrition of the graft and by obliterating dead space lessens the likelihood of infection.

No dental fixation or splints are used until the wound is perfectly healed. Then the case is treated as a simple fracture of the jaw. Union occurs from two to four months. It is best to wait four to six months before fitting the final dentures.

I R B C B DER

Mag th T B A Va i tion in the D st ibution of
the Nervu Abdu c ns in Man 1 h Ophth
90 1 67

The eye muscles and their nerves present one of the most constant features of vertebrate anatomy and in man only a very few abnormalities have been reported in the innervation of the ocular muscles.

In a dissection of the head of a neonate the abducens at about the level of the upper division of the third nerve sent a branch which accompanied that of the oculomotor to the superior rectus and as large as that to the same muscle from the third nerve.

In explaining the condition the author states that this particular abnormality probably arose long after the eye muscles were differentiated and came about as the result of some kind of stimulation to the abducens which in response sent out fiber to the superior rectus.

S S HO VE

Moo S A Sour of Erro n Interp tation f
Ro ntgenograms of tl Skull t S g
Phil o o l 4

Moore calls attention to one source of error in the interpretation of roentgenograms of the skull. His attention was called to this through an article by Merrill Miller and Williams on

A Radiolucent Shadow Factor in Cases of Severe A study of this article and plates led him to the belief that a shadow demonstrated was found in a large proportion of the X-ray lab

ington University Medical School. This condition was first noted about June 1911 and dates from the time when the method of making plates of the skull was changed by the employment of a then new plate holder. Coincidentally the clue to the explanation of its occurrence was furnished by these three facts: that it was not observed in plates made by the method previously employed in the laboratory nor in single plates made without using a plate holder and that it was observed in plates made with the new plate holder. The shadow was found in all the stereoscopic plates of the 255 patients roentgenographed in the laboratory since that date.

These shadows have given rise to considerable confusion and to cases occurring in St. Louis are quite convincing that their incorrect interpretation of sufficient to most disastrous possibilities. In one this dark semilunar shadow was diagnosed as an intracranial hemorrhage apparently without consideration that trauma resulting in such an extensive hemorrhage would have produced symptoms sufficient to enable one to make a diagnosis without the aid of the X-ray. The shadow in the other case is considered due to the presence of a ring in the skull in a totally illogical interpretation in the absence of a history of injury sufficient to have caused it to collect in the skull.

The plate holder used in the cases in which the semilunar shadow appeared consists of a base of cast iron with two semilunar areas cut out to facilitate the insertion and removal of plates. There are also three circular areas presumably for decreasing the weight of the cassette. The top is a thin sheet of aluminum tightly stretched. It will be seen at a glance that the cassette can only be conveniently used with the larger of these semilunar spaces located in such a position that it underlies the vertex of the skull and corresponds to location and curvature to the semilunar translucent areas in the X-ray plates described by Miller and Williams.

To demonstrate that the findings of these authors are due to the plate holder employed. Moore took a healthy subject without history of previous injury or headache and made roentgenograms with this plate holder and then with it in the one made with the holder the semilunar shadow appeared while the plates made without use of the holder the shadow was absent. It is his opinion that the makers of this piece of apparatus have ignored a principle almost axiomatic in the older generation of roentgenology, that radiograms should be made with the plate supported on an uniform grid. Mett is given off secondary rays (when exposed to X rays) the clarity of the plate holder supports to be avoided. Ionizing radiations in a hidden effect when one finds and when he should consider Can the shadow to there a path na

Sachs E. A Note on the Treatment of Compound Fractures of the Skull with Open Dura *Ann Surg Phila* 1919 lxx i

According to Sachs there is still considerable difference of opinion in regard to the treatment of fractured skull. Surgeons differ a good deal as to which case should be decompressed and in which cases operation offers no prospect of relief. This paper is chiefly concerned with the compound fractures of the skull in which the scalp has been torn and the brain traumatized.

The author has attempted to produce brain abscess experimentally but repeated attempts to infect healthy brain tissue with virulent pyogenic organisms failed to produce abscesses. It was his conclusion that devitalized tissue was probably an important factor in bringing about brain infection. Suitable cases for this work are rare in civil life as compared to the huge number of cases encountered among war wounds. In a large percentage of cranial war wounds with open dura foreign bodies are lodged in the brain substance while in fractures occurring in civil life this is very rare. The injury in the latter type of cases is more apt to involve the cortex and subjacent area but does not extend very deeply into the brain.

For the treatment of these cases Sachs advocates the excision of all traumatized tissue, scalp, dura and brain tissue, and replacing the defect in the dura by a transplanted piece of fascia and closing the skin completely without drainage. He has applied this method in two cases and the results have been most satisfactory.

The first case was that of a boy seven and a half years old who was injured while driving a horse. When picked up by a physician he was conscious and crying. Over the right temporal region there was a ragged incised wound from which brain tissue was oozing. Taken three miles to the nearest town he began to vomit. Five hours after the accident he became violent and had to be restrained. No parietic symptoms or speech disturbances were noted by the doctor. He was seen by the author the following morning. There was a lacerated wound two inches long over the right parietofrontal area. Fifteen hundred units of tetanus antitoxin were administered and the patient prepared for operation.

The edges of the wound were excised and the incision carried back so that a skin flap might later be swung over the defect. There was a stellate fracture with one piece of bone deeply driven in. This piece was removed. There was a tear in the dura $2\frac{1}{2}$ inches long. The edges were contused. The dura was opened widely, exposing lacerated pulpy brain tissue. All this area was excised down to the normal cortex and the edges of dura removed. Fascia lata was inserted to replace the defect in the dura. A skin subcutaneous flap was swung over and the flaps closed with interrupted silk. A small rubber drain was inserted. Six months after operation the patient was reported perfectly well.

The second case was a boy of fifteen who had been

kicked by a mule over the left parietal region. There was a large ragged wound of the scalp with pulp brain tissue extruding. The skull under this area could be felt to be crushed into numerous small pieces. The patient was deeply unconscious, blood pressure was 140 systolic.

At operation a vertical incision was made from the zygoma on the left side to a median line over the longitudinal sinus with excision of edges of the skin wound. Bone fragments which had been driven into the brain were removed. The dura was badly lacerated. The edges of the dura were excised and all the pulpy brain excised down to normal brain tissue. The defect in the dura was closed with a piece of fascia lata. The tear in the temporal muscle was repaired and galea and skin closed without drainage.

The wound healed by primary union. When last seen he had a paresis of the arm and leg, but was able to walk and use his hand. Speech was improving. G. W. HOCHREIN

Hastings II. Intracranial Complications of Diseases of the Ear, Nose and Throat *Calif St J Med* 1918 xvi 520

Hastings reports cases of intracranial complications from the accessory sinuses and from malignant growths in the nasopharynx and from suppurative otitis media.

As to suppurative of the accessory sinuses as a cause of intracranial infection the author draws attention to the fact that most of these complications occur after radical operations on the frontal sinus and on the ethmoid.

As to the ear cases in one there was a honey-combed cyst of the petrous bone secondary to chronic middle ear suppuration causing meningitis and death. At autopsy the condition was discovered only after stripping the dura from the petrous bone. In this case the petrous pyramid was unusually cellular thus accounting for the spread of the suppuration in this direction. The other case was one of temporo-sphenoidal abscess secondary to chronic middle ear suppuration successfully operated upon eight years ago. There was a recent attack of dizziness demonstration of a fistula in the horizontal semicircular canal. Reoperation was done and caries of labyrinthine walls found. Recovery followed a radical mastoid operation. OTTO M. ROTT

Swanberg II. Anterior Dislocation of the Atlas Following Tonsillectomy *J Am M* 155 1919 lx i 107

Swanberg reports a case in which a soldier aged twenty-two entered a base hospital on December 10, 1917, suffering from measles and acute follicular tonsillitis. One month later his tonsils were removed. The night following the operation the patient's neck became suddenly stiff and remained so. He was dismissed with no improvement while the etiology was thought to be of focal origin.

On arrival at General Hospital No. 6 the patient's condition was good except that the neck was stiff

but macroscopically it was found to be composed of thyroid tissue. The patient was therefore re-examined and a goitrous tumor was found; the sternomastoid retractor on the left side. The tumor had been noticed by the patient but it did not increase and was painless.

Some months after operation the patient who had been well in the meantime developed intense pain in the operated leg on and in the left thigh. An almost total paraplegia of the lower limbs followed with incontinence of urine and feces and he died after a short time. The author thinks there is no doubt that the terminal phenomena were due to metastasis.

Of our tumors operated upon the danger of sarcoma has often been highlighted. Many have been found to be typical of the thyroid. Patel concluded a number of cases. The author says that the recurrent nature of the type of thyroid malignancy is especially when benign metastatic disease is present. The metastases by the blood stream are usually of the mucous type, but some are of the solid type. The metastases are usually of the solid type.

The author thinks the conclusion is that the recurrent nature of the tumor is a general finding. The author says that the metastases are usually of the solid type. The metastases are usually of the solid type.

Rouquette, S. H. Local Anesthesia and Twilight Sleep in the Surgery of the Thyroid Gland.

During recent years the use of twilight sleep in the surgery of the thyroid gland has been the subject of much discussion. The author says that the use of twilight sleep is a better application of the technique of anesthesia. The author says that the use of twilight sleep is a better application of the technique of anesthesia.

hands as a safe anæsthetic for the very slight or early cases but not sufficiently safe for a primary operation in a severe case. When employed Rouquette prefers the intratracheal method.

The author considers that local anesthesia is the safe method but points out two disadvantages: (1) the mind suffers what the body does not feel and (2) the personality of the patient is put into a state of embarrassment. The surgeon who thinks that the operation may degenerate into a try ordeal for both. To overcome these objections the author employed preliminary injections of morphine. This is followed by the result that the patient is able to perform more quickly and that the patient is equally comfortable throughout the operation.

The dosage is dependent upon the individual but must frequently be a thoracic dose of 1/60 grain of morphine per hour and after 1/2 to 1 hour the operation is done. Morphine is given half an hour later. The patient's ears are plugged and the morphine is given at the time of the first injection.

The results are that the anesthesia is produced uniformly by distention of the tissues and except for the slight increase in capillary oozing there is no equal success with solutions of normal saline or with solutions containing novocaine. He notes that whatever solution is employed should be slowly prepared.

The injection is begun in the patient's room about half an hour before the operation. In the very early part of the operation the patient is placed in a position of comfort. The neck is held in a position of comfort. The patient is placed in a position of comfort. The patient is placed in a position of comfort.

Local anesthesia does not cause the formation of hematomata unless it occurs if more than 10 per cent of adrenalin is used. The author says that the use of local anesthesia is a better application of the technique of anesthesia. The author says that the use of local anesthesia is a better application of the technique of anesthesia.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Dieme, F. L. and McR. R. D. T. V. Lue. f. Cl. t. Fluoroscopia. J. f. M. f. 991.

Based on a study of 130 cases of carcinoma of the breast the author concludes that the percentage of all cases between the ages of twenty and

thirty-one should be subjected to a thorough examination for the detection of possible chest abnormalities. The condition is defined as such a condition in which the patient is found to have a tuberculous lesion of the chest wall. The author says that the use of local anesthesia is a better application of the technique of anesthesia.

but requiring clinical verification 32 showing abnormalities in which clinical verification was absolutely essential and 13 in which no abnormality whatever was noted

The authors are not only convinced that with careful examination very few cases of tuberculosis will pass the roentgenologist unrecognized but that few cases will thus be overlooked than by clinical examination

Among the advantages claimed for fluoroscopy are mentioned the ability to note the diaphragmatic excursions and extent of pleuropericardial adhesions the localization of encapsulated pleural effusion by oblique illumination and the presence of free fluid by the shifting of the fluid level by flexing the patient The posterior mediastinum is readily viewed by turning the patient obliquely and dilatation of the aorta posteriorly may be thus discovered Cases of bronchiectasis pneumoconiosis situs in versus postpneumonic abnormalities and diaphragmatic hernia were detected by the fluoroscopic examination

In conclusion the authors state that fluoroscopy should not be considered an adjunct in chest diagnosis but should primarily be used to detect chest abnormalities especially in wholesale examinations when the clinicians are compelled to devote only a few minutes to each subject ADOLPH HIRTUNG

Table G Regional Anesthesia in Breast Amputations for Cancer (Amputation du sein par cancéral anesthésie régionale) *Presse Méd. Par.* 1919 xxv, 6

Hirtung thinks that in cancer of the breast the Halsted operation is only rarely indicated It is mutilating and shocking and many experienced surgeons have abandoned it It suffices to remove the cellular tissues lying between the axillary ganglia and the tumor and to respect the pectorals Local anesthesia may be applied to this operation

The technique of anesthesia of the breast may be divided into four steps (1) skin infiltration (2) blocking of the brachial plexus (3) blocking of the intercostal nerves (4) subcutaneous infiltration of a large operative field The various steps in each of these stages are described in detail by the author and illustrated

The patient receives a hypodermic injection half an hour previous to allay nervousness For the skin infiltration novocaine solution 1/100 is used 1 ccm being injected at eight selected points For the brachial plexus the technique of anesthesia is the most difficult part of the procedure The author describes the anatomic landmarks and the characteristic pain signal when the needle reaches the plexus Ten ccm of 1/50 novocaine solution is injected here and 5 ccm at Charcot's tubercle as well as at the first rib near the subclavian artery For the intercostal nerves the solution of 1/100 is used The operative field to be anesthetized is bounded above by the clavicle on the inside by the sternal border on the same side below by the

thoracic edge as far as the tenth costal cartilage and thence horizontally and on the outside by a line starting from the posterior angle of the hollow of the axilla and descending vertically to the lower limit of the field A needle 9 to 10 cm long is inserted at selected points and at each one injections are made at successive depths as the needle is pushed to its limit into the cellular tissue

The author draws attention to the absolute necessity of rigorous aseptic precautions being observed in all the anesthetizing instrumentation and manipulations also to the fact that the operation should be conducted without undue haste

The method of local anesthesia allows the patient full use of her faculties and she can voluntarily assist the surgeon The method obviates shock and anemia There are no postanesthetic complications There is less need of assistants less blood loss less shock and fewer complications

W. A. BRENNAN

Litchfield L. Notes on the Diagnosis of Acute Infections in the Thorax *Med. Clin. N. Am.* 1918 ii 517

The following article is based on the author's experience at Camp Crant The transition from acute bronchitis to bronchopneumonia whether interstitial or lobular is often very insidious A chill and gradual or sudden rise of temperature and sharp pleuritic pain on one side and a sudden change in the respiration pulse ratio are the signs likely to mark the beginning of the pneumonic process The true rusty sputum is rare in the streptococcal cases Profuse hæmoptysis may occur in both streptococcal and pneumococcal infections The leucocytosis in streptococcal cases was lower than in pneumococcal infections

The streptococcal bronchopneumonias presented the following picture usually At the onset sore throat coryza cough mucopurulent expectoration headache general malaise with pains throughout the body fever anorexia and at times no chills After several days a chill and a sharp pain in the side set in In a few cases a chill and pain in the chest occurred with sudden onset As the interstitial pneumonia developed dyspnoea became more and more extreme cyanosis developed cough became more distressing temperature irregular with weak and rapid pulse and occasionally drenching sweats the general appearance being quite distressing

The development of a large pleuritic effusion with slight lung involvement presented an opposite picture patients being quiet drowsy and hard to arouse Blood culture in the early stages of the hæmolytic cases were very rarely positive occurring but once in the last twenty three cases being more common in the last stages of the fatal cases The sputum was relied on chiefly for the recognition of the invading organism Rusty sputum with the classical signs and symptoms followed by a crisis generally meant pneumonia which however showed a mucopurulent sputum due probably to a mixed

is rarely necessary. The quantity of free fluid often increases following injection then it gradually diminishes and finally disappears in about twenty days. There is greater or less febrile reaction following the injection. After a few days the iodine may be found eliminated daily in the urine.

W. A. BRENNAN

Legendre L. The Operative Indications and Prognosis in Grippal Purulent Pleuritis (De l'indication et du pronostic opératoires dans les pleurésies purulentes grippales). *Presse méd.* Par 1919 LVII 22

The author has received in his surgical service 23 cases of postgrippal purulent pleurisy. Eight of these died, the others have recovered or are on the way to recovery.

These patients may be divided into two classes. All show dyspnea. In the first group there is pallor with 5 to 30 respirations per minute. The pallor is of toxic origin. They have had pulmonary localizations which are healed or in process of recovery. In such patients operation brings about a progressive diminution of the dyspnea and an immediate fall of temperature. Recovery is the rule.

In the second group the patients have a 45 to 50 respiration rate with very marked cyanosis. Generally the effusion is not abundant but the pulmonary lesions are often bilateral. Operation does not cause a fall in temperature and the dyspnea is increased by the creation of an artificial pneumothorax. Death occurs in twenty-four to forty-eight hours following operation. The prognosis in these cases seems to depend wholly on the condition of the subjacent area and the opposite lung. If the functional value is already deficient, operation aggravates rather than improves conditions. Fifteen of the author's patients who were operated upon when the pulmonary complications had either disappeared or were in way of disappearing recovered; the 8 deaths occurred in cases where operation was done during the full course of the pulmonary lesions. If operation had been deferred these patients might have recovered. Early intervention removed whatever chance they had.

The author concludes that postgrippal pleuritis should be treated medically by evacuation of the effusion by puncture and intrapleural injections of serum until there is recovery or improvement of the pulmonary lesions. Operation may then be practiced with every hope of success.

W. A. BRENNAN

Mozingo A. E. The Surgical Treatment of Empyema by a Closed Method. *J. Am. M. Ass.* 1918 LXXI 2062

The high average mortality of empyema in the various army camps (30.2 per cent) is contrasted with a relatively low mortality in a small series of cases treated by the closed method.

After the location of the cavity is determined by X-ray and needle and a cannula inserted into the

pleural cavity through a simple intercostal knife puncture using novocaine anesthesia a rubber tube closely fitting the cannula is introduced. Air is not allowed to enter. The point of election for drainage is the most dependent part of the abscess. The tube is then made to fit without leakage by means of adhesive and gauze pads.

The cavity is aspirated with a half ounce bulb urethral syringe and injected with Dakin's solution every two to three hours. To prevent the ingress of air the tube is clamped. When the bacterial count drops to one in ten fields and the cultures show marked diminution a 2 per cent formalin in glycerin solution is substituted for the Dakin's solution. Formalin which is a stronger bactericide than Dakin's solution prevents the reformation of pus pockets.

In 32 cases there were no deaths. Twenty-six recovered entirely without secondary operations. In 10 cases there was a communication with a bronchus. The formalin seemed to hasten the closure of the bronchial fistula.

The author concludes:

1. Early operation can be done without shock to the patient; it prevents pulmonary compression and fixation and toxic absorption.

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J. R. BUCHSINDER

TRACHEA AND LUNGS

Key S. N. A Foreign Body in the Right Bronchus Illustrating the Value of Thorough Radiography. *Texas St. J. Med.* 1918 XIV 278

The following case is presented as an example of delayed diagnosis due to incomplete radiography. The patient swallowed a stone causing severe coughing accompanied by some cyanosis. The symptoms subsided before the arrival of the family physician. A week later following a similar attack, an anterior posterior X-ray view of the chest was taken which was negative.

During the next few weeks the patient developed persistent cough, fever and loss of weight. Another anteroposterior X-ray view proved negative. Five months later the condition had become worse and clubbed fingers developed. Two skiagrams were made: one a lateral view, the other taken at an angle to show the right bronchus unobstructed by the sternum and vertebrae showed the foreign body. Under ether oil colonic anesthesia the stone was removed from the right bronchus by direct bronchoscopy.

Whether the pathological changes which necessarily resulted from the five months' sojourn of the

1 ffection as bacillus influenzae or haemolytic streptococci and the defervescence occurred by day 11 instead of 13.

The differentiation between lobar and bronchopneumonia is either not still, but could generally be made by careful clinical observation together with the aid of roentgen by an experienced bacteriologist and the following: Fluoroscopic proved a very valuable adjunct to a careful study of the history and physical findings in all cases of acute chest infection. The auscultatory signs of pneumonia under fluoroscopic examination. The percussion method is not so reliable as the test

[illegible]

Lack of expansion in oneself is the chief thing to be
physically improved. A large pleurisy if
cessive cold pleurisy is the chief thing to be
ema the latter being a chronic condition. A
may be due to voluntary or involuntary contraction of
to pain pleurisy or pleurisy or intercostal pain
of the chest wall. When the tendency to pain
the chest is in the position of the pleurisy
if visible on the fluoroscopic screen, the
horizontal and deeply separated, the
phragm flattened. When lack of expansion
is detected, it is because of pain in the
oblique line of the thorax and the diaphragm is
high domed.

[illegible]

very dense shadow extending over one entire side of the chest must be due to massive hepatization unless the mediastinal shadow is distinctly and markedly enlarged.

ly displaced to the opposite side. A shadow at the periphery shining lighter toward the hilus is probably due to fluid in an adult. A shadow near the hilus fading toward the periphery is probably helped to at a sharp upper line of demarcation of a shadow favoring lobar pneumonia. There is no difference in the shadow produced by serous and pulmonary effusion in the clinical picture and the explanation lies in the differentiation.

In pneumothorax either with serous fluid or pus the material can be felt as a horizontal surface and the demonstration of waves upon this surface by tapping or jarring the chest are well known.

The differential diagnosis may present a fluoroscopic shadow of characteristic shape and location differing from the shadow of an enlarged heart by the slight intermittent visible pulsations and often the apical lesions can be felt either in the outline of the shadow. In the dry stage pericarditis may cause a subpericardial effusion usually accompanied by a friction rub. The effusion may be considered the possibility of a tuberculous abscess elsewhere complicated by an intrathoracic infection. The effusion may cause death because it is associated with tamponade.

II II FREILICH

Ma u iz l M The Cyparoni Method in the T e t
ment of Pl u itl and Tubercular Pe it itis
(Il met do C pp ll c d ll pl u
p nt t t b l m d f c t) G d p
d l n M l n o 8 5 7

Capparoni's method consists of injecting oil emulsified in glycerine into the pleural cavity. The merit of this method lies in the selection of the substance injected because injections of various kinds have long been practiced but did not give satisfactory results.

M u s t u s e t h i s m e t h o d n o t o n l y f o r s i m p l e e o f f i n o u p l u r t b u t f o r t u b e c u l a e m p y m a s . W h i l e t h e t r e a t m e n t o f s t a p h y l o c o c c a l a n d s t r e p t o c o c c i e m p y m a s m u t u n q u e s t i o n a b l y r e m a i n s u r g e l u r g e r y i d a m g a g w h e r e t h e m y p e n a t u b e c u l r b e c a u s e (r) t d o e s n o t c u r e t h e p r i m a r y l e s i o n () i t g i v e s a s e c o n d a r y i n f e c t i o n s (3) i n s u c h c a s e s r e s i d u a l f i t u l a m a y e a s i l y o c c u r a n d t h i s t u l a p e n e n t . O n t h e o t h e r h a n d l i n e l i b e r t e d t h e p l u r a l c a v i t y h a s a d e s t r u c t i v e e f f e c t o n t h e K o c h b a c i l l u s a f a v o r a b l e a c t i o n i n t h e l u n g a n d s e t s u p a n a u t o t u b e r c u l i n t h e a p p e a r a n c e o f t u b e r c u l a p e r t o n i t t h e a t h r d o e s n o t d e n y t h e v a l u e o f s u g i c a l t r e a t m e n t y e t t h e r e a r e m a n y h e r e t h e r e s u r y c o n t r a i n d i c a t e d () c a s e n i n w h i c h t h e r e i s a c o n c o m i t a n t e u d a t p l e i t s () c o m i t n t t u b e r c u l l e i o s s f t h e l u g a n d i t t e

f M ur ip ef r ste ih el asel ne oil as a med um
 f the odine nstead f glyceri e s used by Cap
 p o He injects f om 2 to 4 gra s of iod su
 pended in r to o grain of va che A
 r ct n rally g c g oi results n l ec nd

is rarely necessary. The quantity of free fluid often increases following injection then it gradually diminishes and finally disappears in about twenty days. There is greater or less febrile reaction following the injection. After a few days the iodine may be found eliminated daily in the urine.

W. A. BRENNAN

Legendre L. The Operative Indications and Prognosis in Grippal Purulent Pleuritis (De l'indication et du pronostic opératoires dans les pleurésies purulentes grippales). *Presse méd.* Par 1919 xviii 22

The author has received in his surgical service 23 cases of postgrippal purulent pleurisy. Eight of these died; the others have recovered or are on the way to recovery.

These patients may be divided into two classes. All show dyspnea. In the first group there is pallor with 25 to 30 respirations per minute. The pallor is of toxic origin. They have had pulmonary localizations which are healed or in process of recovery. In such patients operation brings about a progressive diminution of the dyspnea and an immediate fall of temperature. Recovery is the rule.

In the second group the patients have a 45 to 50 respiration rate with very marked cyanosis. Generally the effusion is not abundant but the pulmonary lesions are often bilateral. Operation does not cause a fall in temperature and the dyspnea is increased by the creation of an artificial pneumothorax. Death occurs in twenty-four to forty-eight hours following operation. The prognosis in these cases seems to depend wholly on the condition of the subjacent area and the opposite lung. If the functional value is already deficient operation aggravates rather than improves conditions. Fifteen of the author's patients who were operated upon when the pulmonary complications had either disappeared or were in way of disappearing recovered; the 8 deaths occurred in cases where operation was done during the full course of the pulmonary lesions. If operation had been deferred these patients might have recovered. Early intervention removed whatever chance they had.

The author concludes that postgrippal pleuritis should be treated medically by evacuation of the effusion by puncture and intrapleural injections of serum until there is recovery or improvement of the pulmonary lesions. Operation may then be practiced with every hope of success.

W. A. BRENNAN

Mozingo A. E. The Surgical Treatment of Empyema by a Closed Method. *J. Am. M. Ass.* 1918 lvi 2062

The high average mortality of empyema in the various army camps (30 per cent) contrasted with a relatively low mortality in a small series of cases treated by the closed method.

After the location of the cavity is determined by X-ray and needle and a cannula inserted into the

pleural cavity through a simple intercostal knife puncture using novocaine anesthesia a rubber tube closely fitting the cannula is introduced. Air is not allowed to enter. The point of election for drainage is the most dependent part of the abscess. The tube is then made to fit without leakage by means of adhesive and gauze pads.

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and finally suspended. Some of these patients have been observed for six months without any recurrence of the expectoration and other symptoms.

Lo Monaco does not affirm that these patients are cured as he has no means of proving it. He thinks that the lung wound evolves toward complete cicatrization.

The injections are somewhat painful and a little cocaine should be used. Also some fever is induced and this may either increase or cease.

The patients in whom the injections give the best results are those in whom the acute stage has passed and whose principal symptoms are excessive expectoration with nocturnal sweats, hyperthermia, denutrition and notable weakness.

The injections are harmless and there are no contra indications. They are however less effective in patients with arteriosclerosis.

These injections as well as having a favorable action on the expectoration also act favorably on the gastric, pancreatic and other secretions.

W. A. BRENNAN

Behrend M. Empyema Abscess and Gangrene of the Lung Following Epidemic Influenza N. Y. M. J. 1919 Oct. 30

Many cases of empyema following epidemic influenza remained undiagnosed for days and weeks because no subjective symptoms were present. This occurred especially in small localized empyemas. Diagnosis was easy in large empyemas on account of dyspnea and the physical signs elicited. Prolongation of temperature beyond the normal period for a pneumonia was present in only a few cases. Diagnosis was made difficult in some patients because all the physical signs of pneumonia were heard over the empyema.

The aspirator usually cleared the situation. The author makes a plea for the more frequent use of the aspirator which is the instrument he prefers. If this is not at hand a Luer syringe will assist in making the diagnosis. These instruments are placed first and the X-ray second as aids in arriving at a proper diagnosis. Many conflicting observations were made with the X-ray.

Bacteriologically a mixed infection comprising staphylococci, bacillus coli, streptococci and pneumococci in various combinations were found. *Proteus vulgaris* and pneumococci were found in pure culture.

The type of operation preferred is a costectomy because the chest cavity can be explored, the character of the abscess determined, the condition of the lung inspected and palpated.

After treatment consisted in using irrigations of Carrel-Dakin solution except in case where the lung was involved. After the discharge ceased dichloramine T was used to close the sinus.

The anesthetic that gave the best results in these cases was nitrous oxide gas and oxygen.

The paper is based on a study of 10 cases. It is illustrated by eight line drawings.

HEART AND VASCULAR SYSTEM

Herrick W. W. Meningococcic Pericarditis with Report of 12 Cases. *Med. Clin. N. Am.* 1918 11 411

The result of the study of epidemic cerebrospinal meningitis in the camps has been the quite definite establishment of the disease as primarily a meningococcic sepsis, a blood stream invasion from the initial focus in the upper air passages with usual but not constant localization in various susceptible parts of the body. The most common site of secondary localization is of course the meninges. In the author's experience this meningeal localization has followed the general meningococcic sepsis in 96 per cent of cases. Next in frequency the lungs, the joints, the serous membranes, the testicle and epididymis and the endocardium are involved. The author summarizes as follows:

In an epidemic of 280 cases there were 12 examples of pericarditis, a percentage of 4.29.

Pericarditis is a complication of serious meningococcic sepsis. With but one exception the 11 cases of the series were extremely serious. Only 1 was mild. In an epidemic the mortality of which was 24.8 per cent, the mortality in cases showing this complication was 83 1/3 per cent. In other words 10 of the 11 cases with pericarditis died.

Two types of meningococcus pericarditis may be described, the wet and dry. Of the 11 cases here reported there were 6 of each type. The amount of exudate was large in cases small in 1. The largest effusion amounted to 640 ccm, the others to 100 ccm, 50 ccm, 40 ccm, 30 ccm in order. The exudate was either a bloody purulent rather than fluid containing small or large flakes or masses of fibrin or a thick creamy yellow mixture of pus and fibrin. The large effusions were of the first type. Meningococci were present in most of the fluids. The exudate in the dry variety was fibropurulent in character, fibrin predominating. This fibrin varied in amount from a plaque one inch in diameter to the most exaggerated kind of shaggy or bread and butter heart. In 1 case the masses of fibrin were of almost inconceivable size so that when retracted the pericardium in both visceral and parietal layers was covered by masses of shaggy, yellowish white exudate some as much as two inches in diameter. The exudate in this case was much more massive than one sees in case of pneumococcic pericarditis.

Symptoms of meningococcic pericarditis are rarely as characteristic as those of the pericarditis of pneumococcic infection. Meningococcic pericarditis is merely a part of systemic infection, its symptoms merge with those of the generalized disease. As a rule these symptoms are high fever, a more rapid pulse and a general increase in the toxæmia. With the presence of a large effusion the expected symptoms and signs of this physical condition appear and are not in any way peculiar. The pulse rate in the series reported averaged 124, varying from 54 the lowest to 166 the highest, 10 of the 12

al opening leave as additional sequelæ scoliosis lordosis etc caused by muscular and cicatricial contractions and vicious postures acquired either during the patient's stay in bed or immediately after getting up. After a few months such a posture frequently becomes habitual.

The author appraises the scale of pensions to which patients with such complications are entitled.

W A BRENNAN

GASTRO INTESTINAL TRACT

Kahn M. *Borderline Gastric Disease*. N I M J 1919 CIV 105

The author reports very satisfactory results with the fractional gastric analysis method for the diagnosis of various stomach diseases. A method is described whereby the stomach and the duodenal contents of a patient may be simultaneously examined at fifteen minute intervals and whereby duodenal ulcer may be differentiated from other conditions simulating duodenal ulcer as determined by the ascending curve obtained in the fractional gastric analysis.

The Glutzniski test meal is of doubtful value. The gastro albumorrhœa test is however of distinct help in the differential diagnosis of gastric malignancy.

Gillette W J. *Acute Gastric Dilatation*. 1m J Obst N Y 1918 LVII 758

In acute gastric dilatation after lavage and position have been thoroughly tried without success the author suggests that the stomach be evacuated with the tube as completely as possible in order that it may be in a collapsed state and so readily dealt with and that the abdomen then be opened in the upper median line. The stomach transverse colon and omentum are delivered as for a posterior gastro enterostomy a loop of the jejunum is brought up as high as possible and attached to the skin. It is opened and a tube introduced through it directly into the duodenum close in the abdomen about 11. This procedure experimentally is practical and should be of value if the toxicity retained by the duodenum is the important factor.

In addition to surgery repeated evacuation of the stomach with the tube and the placing of the patient in a position to overcome gravity of the intestines such as the knee chest position and the ventral position with the foot of the bed greatly elevated are to be recommended but reliance upon these measures alone will surely be accompanied by a high death rate. Zade recommends that the patient be kept in the knee chest position fifteen minutes out of every two hours but the author believes this time should be doubled.

EDWARD L CORNELL

Voto Bernales J. *A Gastric Pseudo Calculus* (Sobre un pseudo cálculo gástrico). 1n I c de med Lima 1918 i 196

In a man aged forty years the symptoms of whose case suggested gastric ulcer laparotomy showed no

signs of ulceration on the anterior face of the stomach but palpation showed the presence within its cavity of a large foreign body of semi smooth consistency rounded surface and free. An anterior gastrotomy was done the stomach was incised in its median portion and the foreign body extracted. The gastric mucosa was much thickened congested and bloody in some points.

The foreign body weighed somewhat over 25 grams and was about 6 cm long and 3.5 cm wide. It was blackish in color and of a spongy irregular surface. It did not show successive layers like calculi but was porous and absorbent. Spectroscopically it showed the characteristic bands of hæmatin. The facts obtained from examination led to the conclusion that it was not of hepatic origin but was composed of coagulated blood which had become organized and was enveloped in a thin covering of bile pigment.

The author finds it difficult to account for the origin of this foreign body he believes it was formed within the stomach. The history of the patient showed alcoholism which may account for the stomach hæmorrhage especially in a patient with chronic gastritis. The presence of blood in the stomach may also have been the result of an ordinary Cruveilhier ulcer. This was the pre operative diagnosis which was abandoned during the course of the operation.

W A BRENNAN

Terada M. and Others. *Spirochæta Found in the Walls of the Stomach*. Se i Kaui Tokyo 1918 XXXII 55

Certain spirochæta have been found in the stomach walls of animals. The authors have examined 9 ulcerous and 18 cancerous human stomachs from autopsy cases. In every case they selected that part of the stomach wall bordering on the healthy and diseased regions.

In one each of the ulcerous and cancerous stomach typical spiral bodies were found in each case in the circular muscular layer these bodies stained a brownish black in color without the presence of any other bacteria.

Other bacteria existed only in the superficial mucosa which was undergoing a necrotic process they never invaded the healthy tissues deeply. Only few spiral bodies were detected in the necrosed mucosa. On examining the blood vessels of both the mucous and muscular layers the authors found many spiral bodies and syphilitic bacteria around these vessels but in the walls and emboli of the blood vessels only spiral bodies were found.

The muscular layer in which they existed was proved to be healthy tissue by the method of hematoxylin nuclear staining. Especially on staining with methylene blue and Ziehl's carbol fuchsin it was ascertained that in the circular muscle layers no other bacteria than the spiral bodies could be found.

In size these spiral bodies were everywhere comparatively equal the turns of the spirals were fairly regular and the contour very sharp. Further research

weeks giving no appreciable benefit abdominal paracentesis was done and the patient relieved of nearly two gallons of milky white chylous fluid. The patient died at the end of six weeks paracentesis having been necessary at frequent intervals in the meantime. Necropsy revealed a new growth at the head of the pancreas with evident occlusion of the thoracic duct. The thyroid enlargement rapidly subsided after the first paracentesis and her weight ran down from about two hundred pounds when first seen to eighty five pounds at the time of her death six weeks later.

In the second case reported the patient aged sixty years was pronounced asthmatic had had three or four attacks of so called biliary colic in the last ten or fifteen years and cardiovascular disturbances. When first seen the patient had been vomiting almost constantly for four days fecal material had been vomited. On the basis of the foregoing history the condition was diagnosed as a case of acute fecal obstruction. On opening the abdomen the fecal obstruction was found to be due primarily to the presence of a large cholelith. The intestine had become twisted upon itself and the lumen entirely occluded. This intestinal kink was easily untwisted and the cholelith and the accumulated feces pushed toward the rectum. The patient later voided the concretion and made an uneventful recovery. C. D. HOLMES

Von Fberts E. M. Polya's Method of Anastomosing the Proximal Gastric Stump with the Jejunum *Canad. M. Ass. J.* 1918 VIII 993

The early diagnosis of cancer the increased frequency with which pylorotomy is performed and the improvement in surgical technique have made gastrectomy possible. Thus cancer of the stomach may be cured and many lives prolonged.

Polya demonstrated that the procedure of gastrojejunostomy can be performed without leakage that the union of the stomach and intestine is effected without tension that the mechanical conditions for emptying the stomach are favorable and also that his method can be done more quickly than previous methods.

According to Polya's method the jejunal loop is brought up through a slit in the mesocolon. By this means freedom of action is secured. At the conclusion of the anastomotic suture the stump of the stomach is drawn down through the opening in the mesocolon and the edges of the mesocolon sutured to it. If a high resection is performed the small bowel should be brought up in front of the transverse colon and the anastomosis with the jejunum performed at a distance of from fifteen to eighteen inches from its origin.

In 1911 Polya had tried his method in six cases two of which were entirely cured while another lived forty nine days. In the three following cases Polya's original procedure was followed. In none did vomiting occur after the operation and all three left the hospital free from symptoms.

In each case pain was noticed in the epigastrium coming on one or two hours after eating. Vomiting was very frequent but no blood was found in either the vomitus or stool. Loss in weight varied from 15 to 35 pounds in the three patients. On examination a distinct mass was felt in the region of the pylorus in the first case while the last two showed a tenderness in the same region.

After a test meal and bismuth series the first patient showed a lesion at the pylorus suggesting ulcer rather than carcinoma. The last two appeared to be ulcer because of the tenderness and irregularity in the pyloric orifice. All three showed the retention of food after six hours.

In each case an incision was made through the right rectus. In the first patient a large inflammatory mass was exposed with enlarged soft glands in the gastrohepatic omentum and the fundal portion of the stomach was dilated. No difficulty was experienced in suturing the mesocolon above the line of anastomosis.

The second case showed an extensive superficial ulceration of the whole pyloric portion of the stomach. A gastrectomy was done. The stump of the duodenum was closed. The stomach was drawn down and the fundal portion removed. Anastomosis was effected between the stump of the stomach and the lateral wall of the jejunum.

In the third case a large ulcer and several smaller ones were found in involving so large an area that a complete pylorotomy was done.

In all instances convalescence was uninterrupted. A test meal given later showed the stomach completely emptied in a short time varying from three hours to fifteen minutes. F. P. HAMMOND

Kerley C. G. Twenty Six Cases of Hypertrophic Stenosis of the Pylorus in Private Practice with Operation by the Rammstedt Method *J. I. M. Ass.* 1919 LXII 16

A resume of the results in 6 cases of congenital pyloric stenosis treated by Rammstedt's method is herein presented. There were 17 boys and 9 girls. The earliest age at operation was three weeks the lowest weight four pounds.

The onset was abrupt in 3 cases. Twenty three cases were entirely breast fed at the onset of vomiting. 9 were so fed when they came under observation. The vomiting in all cases was projectile. The usual retention of food and the presence of scanty urine and stools were noted. The infants were all hungry. Every case showed peristaltic waves. Twenty five had palpable tumors. In 17 cases there was no postoperative vomiting. There were 4 deaths.

The routine treatment carried out was that evolved by Downes and Holt. The infant is brought to the operating room wrapped in blankets. The bed is warmed. After operation the head is lowered for an hour or two to prevent aspiration of mucus. Hypodermoclysis of 100 ccm of normal salt solution is given. Barley water and breast milk feedings are begun one and one half hours after operation.

The author emphasizes early diagnosis and immediate operation as a preventive of high mortality. This is particularly true in the cases. The average mortality with the Rammstedt operation is five per cent.

J K BUCH

V not A Two Cases of Acute Appendicitis

Duodenal Occlusion (Surgical) G. H. B. D. d. d. al. g. e. t. m. e. t. qu. 98

The author reports cases of acute enteromesenteric duodenal occlusion in soldiers aged twenty five and twenty one years. The first had been operated upon for a knee injury. The patient was suddenly seized with vomiting and despite treatment died within twenty four hours. Autopsy showed the stomach and the first and second parts of the duodenum enormously dilated as the right half of the third part of the mesentery. The latter was pulled strongly down and backward. On freeing the mesentery the duodenal contents were allowed the arrested contents to pass.

In the second case the symptoms were similar in the onset. Immediately after being put in the knee chest position the man perceived relief and recovered rapidly.

The author believes that in the majority of cases acute dilatation of the stomach is nothing else than the result of an enteromesenteric duodenal occlusion.

W. A. BR.

Cowdry G. T. Adenocarcinoma of the Intestine of Unusual Generalization and with Pulmonary Cystic Metastases

1 M. J. M. S. 99154

This case is reported because of the unusual generalization and appearance of the metastases which had some resemblance to pneumatoxysts to desintestinoses of a dead man. The patient a Chinaman was operated upon and although the abdomen was filled with fluid the abdominal cavity was drained. The intestines were studied and the omentum was massed above the umbilicus. An enlarged gland was removed and examined and diagnosed as a metastasis of adenocarcinoma. About one month later the patient died and at autopsy as held. The omentum and intestines showed numerous large and smaller frequently cystic tumor masses. These would be roughly divided into three classes.

1. Firm solid nodular growths situated most frequently near or in the mesenteric attachment. They appeared to be immediately beneath the serous coat very rounded flattened surfaces and varied in size from a few millimeters to 1 cm. or more. One about the size of a small egg, covered in the cecum near the iliac valve. On section they were whitish yellow tissue. Microscopic examination showed them to be metastases of adenocarcinoma.

Small spherical masses varying from a few millimeters to 1 cm. beneath the mucous surface of the intestine. They were soft and cystic

to the touch and on section were filled with a thick mucoid material.

3. Several large cysts projecting into the lumen of the gut and lying between the serosa and mucosa. They were slightly emphysematous and filled with a whitish partly gelatinous partly mucoid material.

One cyst was excised and examined bacteriologically with the following results: (1) a variant of bacillus communis which fermented lactose very slowly and feebly to acid and gas. (2) bacillus communis excretal type.

A primary lesion could be demonstrated. The distribution of the lesions was confined to the gut peritoneal glands omentum and hilus of the liver indicating a dissemination through the peritoneal lymphatics.

I. W. B. CH.

L. Mont A. A Case of Intestinal Perforation by a Bullet

Resection of the Suture Recurrence of Perforation. 145154

A soldier received a bullet wound about a centimeter below the middle of the left crural arch. The patient was done five hours later. The abdomen contained much blood. An important vessel was injured the hemorrhage coming from the nteric. Laffont found twelve perforations in the small intestine four in the transverse colon and two in the cecum. The omentum was traversed three times by the bullet four times but no important vessel was sectioned.

After cleansing with ether the perforations were ligated. A loop of small intestine containing four perforations was excised and sutured end to end. Other perforations were sutured. The peritoneal cavity was washed with 1 percent solution of magnesium chloride and the abdomen closed after exteriorizing the bullet and placing a drain. The operation lasted one and one quarter hours. The postoperative course was simple and the man recovered without incident.

The successful result was due to the operation of resection and cleansing of the abdominal cavity. In this case Laffont left about 100 g of the cholelith in the lumen after operation. In discussing the case Delbet said it was his custom in gynecological laparotomies to leave from 50 g to 1 liter of magnesium chloride solution in the peritoneal cavity and to this he attributed the absence of shock in such patients. Delbet further pointed out that in cases of diffuse peritonitis abundant lavage between the testicular loop and out of the peritoneal cavity is sufficient.

W. A. B. N. A. N.

Wright G. Secondary Jejunal and Gastrojejunal Ulcer

1 M. J. M. S. 9191390

The author reports three cases in which this complication occurred. The first is a remarkable one on account of a rare pathological lesion of the stomach in addition to the second ulceration which followed gastroenterostomy. During operation for

chronic appendicitis a red mass was observed in the center of the abdomen extending downward into the pelvis. This was very vascular and began to bleed when touched by the finger. Through a mid line incision the mass was removed. It proved to be a large soft tumor occupying the greater part of the large omentum and continuous (by a pedicle about one half inch in diameter) with a tumor about the size of a walnut in the greater curvature of the stomach. The tumor originated in the submucous coat and microscopically was an endothelioma. Six years later a second operation was performed for relief of obstruction at the pylorus following the contraction of an ulcer on the upper margin of the duodenum just beyond the pyloric ring. An anterior gastro enterostomy was performed using a double row of continuous silk sutures. Seven months later a third operation was necessary and an ulcer was found on the efferent loop of jejunum just beyond the anastomosis. This ulcer was adherent to the anterior abdominal wall. When the adhesion was divided the lumen of bowel was opened and presenting through the opening was the knot of a silk suture. This was removed and the ulcer infolded. The ulcer perforated about ten months later and was again sutured. Seven weeks later the adhesion to the abdominal wall was divided and the anastomosis undone the stomach opening being closed. The affected portion of jejunum was next excised the ends infolded and a lateral anastomosis made. A posterior gastro enterostomy was then established in the ordinary way catgut alone being used for both rows of sutures. The patient made an excellent recovery and at present is still free from symptoms. This case gains additional interest from the fact that the patient had one of the rare external polypoid tumors of the stomach. In this case it originated from the submucous coat and though it was malignant in nature the patient was free from any sign of recurrence at the last operation seven years after its removal.

The situation of the ulcer may be (1) gastro jejunal when the ulceration is on the line of anastomosis (2) true jejunal ulceration. The latter are usually situated on the efferent jejunal loop with in a short distance of the gastro enterostomy.

Two clinical types are met with (1) the acute perforating ulcer which resembles the acute ulcer of the stomach and (2) the chronic ulcer which has shelving edges and sets up local peritonitis the ulcer becoming adherent to surrounding structures and in many cases producing a large inflammatory swelling. The course taken by these chronic cases differs according to the type of the preliminary gastro enterostomy. An external or internal fistula may be produced by a process of chronic perforation. In the process of healing or partial healing contraction and stenosis may ensue. By far the commonest form of stenosis however is that which results from gastrojejunal ulceration which leads to narrowing of the stoma.

In some cases this may be so extreme as to lead to complete obliteration of the stoma and there is no doubt that the cases of narrowing and obliteration of the opening which have been reported after gastro enterostomy are due to antecedent ulceration and not to non functioning of the artificial opening owing to patency of the pylorus as was at one time suggested.

A correct appreciation of the etiology is necessary in order to minimize or avoid this ulceration. The incidence of jejunal ulcer is rather greater in males than in females as is also the case in gastric and duodenal ulcers. As regards the type of preliminary operation jejunal ulcer more frequently follows the anterior operation than the posterior especially when the anterior has been done en Y or with entero anastomosis. It is significant that no case of secondary ulceration has been reported after gastro duodenostomy.

The exciting or actual causes as apart from the predisposing can be divided into (1) physiological (2) errors in technique. In group one the action of the gastric juice on the mucous membrane of the anastomosis area or of the jejunum almost certainly has an effect in all the cases of ulceration even when it is not the sole cause. Hyperacidity undoubtedly increases the liability to ulceration probably by increasing the digestive properties of the gastric contents. This digestive action is brought into play by one or both of two factors (a) the inability of the jejunal mucosa to withstand a digestive action to which it is unaccustomed (b) local injuries of the mucosa. The inability of the intestinal mucosa to withstand peptic digestion probably increases from the pylorus onward and this would explain the greater frequency of jejunal ulceration following the anterior operation.

Errors in technique play an important part especially in gastrojejunal ulceration. Of prime importance is the method of effecting the anastomosis. Murphy's button produces a line of necrosis which must heal by granulation giving a favorable opportunity for the gastric contents to act. Further both buttons and bobbins are foreign bodies of a hard nature which can easily injure the mucosa away from the suture line allowing access of the gastric juices to the injured tissues. There is a gradually increasing body of opinion that it is the presence of an unabsorbable suture material such as silk or linen which causes secondary ulceration especially of the gastrojejunal type. The harmful effects of the unabsorbable continuous suture may be produced in various ways. An infected suture may produce ulceration on the anastomosis primarily of an acute infective character which later on becomes chronic owing to the digestive action of the gastric contents. Again a sterile suture may as it becomes loosened tear out of the anastomotic ring and produce a lesion which allows the digestive action to commence. In either of these two ways gastrojejunal ulceration may be set up. True jejunal ulcer may also arise as the result of the pres-

ence of such suture. In that case the loosened suture is saved about by the passage of stomach contents and rubbed against the jejunal mucosa abroad thus leading to ulceration. The pressure of clamps has been suggested as a factor in the production of these ulcers but without evidence and the theory of diminished blood supply does not seem to support it. In the case of acute septal infection, the following are the principles to be followed: Division of the nodule and consequent removal of the infection due to removal of the infected part.

The author concludes that

the combatted as to curative treatment when ulceration has appeared a preliminary course of medical treatment—rest, diet and alkalies—may be tried but is to be followed by early surgical intervention when indicated by persistence of symptoms and especially when pain appears. The use of bismuth gut sutures is a matter of prime importance in any secondary operation.

E. A. P. 1

Le euf J. and Huyer G. The Indications for Cecostomy in the Treatment of Dysentery. (L. J. L. d. J. x. t. m. d. l. t. e. m. t. d. y. t.) P. d. l. P. 981

In chronic dysentery the authors have also observed that cases which end in death usually begin in a severe form. Cecostomy has given very good results in cachectic dysentery but in the majority of cases the result is transient only. The patient recovers from the dysentery but dies after some weeks from bronchopneumonia or some complication arising from the cachectic condition. From cecostomy a definite recovery may be expected without the fear of a relapse or recurrence or any sequelæ such as a liver abscess.

The authors describe their operative technique in making the cecostomy and intestinal lavage. In their earlier patients a general anæsthetic (ether) was used but on account of the state of the liver regional anæsthesia is preferable and spinal anæsthesia gives good results. Defecation by the anus takes place after from ten to fifteen days when the stools become normal. Lavage is suspended and the fecal fistula is closed.

W. A. BRENNAN

Potherat E. and Potherat G. Hydro Appendix
(Hydro appendix) *Bull et J. Soc. de chir. de P. r.* 918 et 1689

The appendix reported by the authors was the size of a banana, slightly curved at its mesenteric insertion. There was a diverticulum at its free extremity so that this end appeared blind. It was filled with free translucent fluid. The proximal end was spheroid in shape with a small projection into the interior of the cæcum. To remove the appendix it was necessary to resect all the periphery of the cæcum around the projection which was filled with hardened fecal matter.

The patient was a woman aged forty-nine. The diagnosis had been a malignant ileocecal tumor or tuberculous hypertrophy. The hard irregular tumor could be felt in the right iliac fossa. It was found to consist of the appendix and an accumulation of hard feces, part of which had passed away after purgation before operation.

W. A. BRENNAN

Franco J. A. The Diagnosis of Appendicitis by the X Rays (Diagnostico di appendicite pelo raios X)
Bra. l. ed. 1918 xviii 39

The author's method of diagnosing appendicitis consists in insufflation of the large intestine with oxygen by the rectal route under direct control of the X rays. Toward this end the author has constructed a special apparatus for the oxygen injections by which the quantity can be regulated and the cæcal and appendicular maximum pressures determined.

Experience gained from many cases in which this method has been used shows that

1. In appendiceal inflammations no pain is experienced at the beginning of insufflation but when the cæcum becomes filled and exerts pressure on the appendix the patient experiences a dull pain which

at times becomes acute. On relaxing the intra-cæcal pressure the pain ceases. The manometer attached to the apparatus registers the pressure.

In colitis from the beginning of the insufflation vague pains are felt all over the abdomen. The appendix is however quiescent.

3. In ptosis of the transverse colon at the commencement of insufflation pain is felt in the colic angles. This pain sometimes yields on complete intestinal insufflation but it persists when there are adhesions, Lane's kinks, tumors, etc.

4. In insufficiency of the ileocecal valve on filling the ileum there is absence of any pain and the manometer does not register a stable pressure.

The author claims that the oxygen insufflation method has many advantages. It can be applied to patients of all ages. The only previous preparation is a cleansing enterolysis; the employment of bismuth or other preparations is unnecessary.

This method the author considers simple, rapid and definite. He has been using it for the past three years and has never had any complications, either immediate or remote.

W. A. BRENNAN

Nasseti F. Supracæcal Stenosis Due to Abnormal Conditions of the Appendix (Stenosi sopra cecale da anormali condizioni anatomiche dell'appendice) *Polichin* Roma 1919 xxvi sez. chir. 21

An abnormally long appendix may twist or knot about a loop of intestine causing obstruction. The small intestine is usually involved. In a case treated by Nasseti the appendix was 1 cm. long, the normal length in an adult is from 6 to 9 cm. The longest appendix recorded in literature was 33 cm. long. In the author's case the appendix of the ascending type formed an incompletely stricture band around the intestine between the cæcum and colon.

The syndrome presented by this patient was similar to that observed in typical cases of supracæcal stenosis by a pericolic membrane.

Operation showed the small intestine and the transverse and descending colon normal. The cæcum was in normal position but fixed and strongly distended although free from adhesions. The appendix was normally located but united with the cæcum winding about it upward then laterally and finally becoming lost in the deepest point of the ileocecal fold. The appendix was ligated and sectioned at its base. After much difficulty it was traced for its whole length and freed. Incomplete intestinal stenosis had occurred about 8 cm. from the lower extremity of the cæcum where it was enveloped by the appendix. When completely freed the appendix was similar in appearance to an ascaris lumbricoides. Microscopically it was observed to be fibrous toward its distal part. The patient made an uneventful recovery.

The author discusses similar cases in literature and compares his own case.

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Bra il med. 918 vt 390

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W. A. BRENNAN

Suture was done in 10 cases with 6 recoveries and 4 deaths. Several of these were desperate cases. In 1 case alone icterus was seen four days after abstention. In addition to the 4 extensive rupture cases the biliary passages were found injured in 2 cases. In all these cases death resulted.

Soubeyran thinks that there are two important points in the clinical history of liver wounds: (1) hæmorrhage (2) associated lesions. Besides the usual symptoms of an internal hæmorrhage there are two important signs: (1) painful contraction of the abdominal wall in front of the liver with sensitivity of the region on slight palpation; this pain being also found on pressure upon the prehepatic intercostal spaces (2) vivid and spontaneous pain with dyspnoea especially when the projectile has traversed the pleura and perforates the diaphragm.

Criation is indicated if there are signs of severe hæmorrhage especially if this can be identified in the hilum region also if another visceral injury is suspected. Radiology and examination of the projectile track will aid here.

Abstention is indicated if hæmorrhage is slight or absent also if there is radiologic evidence that the projectile is small and lodged in the hepatic tissue without showing immediate complications. A shocked patient should not be operated upon.

The route of approach to the liver may be anterior or posterolateral. For the first a median or lateral laparotomy, a right subcostal oblique incision, an oblique incision with costal resection or some combination of these can be used. For the posterolateral route the transpleuro diaphragmatic route with costal resection is available. The method selected will depend on the orifice of entry and the route of the projectile. The transthoracic anterolateral or posterior method will be used for a blind wound the entry orifice of which is situated in an intercostal space or on a rib apparently in the hepatic zone. By the abdominal route lesions of the inferior face of the anterior border and of the convex face in its anterior portion can be explored. The transpleuro diaphragmatic route with enlargement of the diaphragm perforation exposes the posterosuperior part of the liver.

In treatment small wounds are simply sutured. A deep tunnel wound should be drained with a mesh or gauze as a hæmatoma may form. Large wounds in the liver should be closed by simple or U sutures which should not be tightly drawn. If the edges are contused and uneven and appear infected a tampon should be added in the case of extensive destruction a rapid tamponade should be made with resection after ligation of the torn parts. When there are concomitant bile passage lesions a cholecystectomy is usually called for unless the lesion is merely a slight perforation which can be sutured.

The immediate removal of retained projectiles is desirable but the operation should not be prolonged in searching for them if not easily located. The hepatic tissue is very tolerant of foreign bodies and is capable of defending itself against their septicity.

In any case they can be removed later and under better conditions.

The author gives clinical histories of his 6 cases
W. A. BRENNAN

Smithies F. Primary Carcinoma of the Gall Bladder: an Analysis of 23 Proved Instances of the Disease. *Am J M Sc* 1919 clvii 67

In a series of 1000 cases of operatively and pathologically demonstrated instances of gall bladder disease reviewed by Smithies there were 31 cases of malignancy. The neoplasm was primary in 3 instances, in the other 8 cases the gall bladder was secondarily invaded by extension from adjacent viscera. There occurred no instance of primary neoplasm of the bile ducts. This rate of incidence is more than four times that of primary malignancy of the appendix and is fifth in frequency for neoplasms involving the organs concerned in digestion. The order is as follows: (1) stomach (2) colon and cæcum (3) rectum (4) oesophagus (5) gall bladder (6) liver (7) appendix.

A clinical analysis of these cases was made as follows: 16 cases were in males and 7 in females notwithstanding the fact that gall stones are about three times more common in females than males and are usually thought to have an influence on gall bladder malignancy. The average age was fifty-nine years. In males the minimum age was forty-four and the maximum seventy-six (average 57.9 years). In females the minimum was fifty-six and maximum seventy-two (average 64 years). In only one case could the history of heredity be elicited. The duration of symptoms could usually be divided into two time phases: (a) a clinical form not that commonly considered malignant and (b) a terminal complaint frequently evidencing such serious local and constitutional disturbances as to render a suspicion of some malignant process highly probable. In this series 16 cases (69 per cent) had a previously harmless type of gall bladder dyspepsia. This was commonly intermittently manifested and extended in the average case 9.6 years (minimum 3 years maximum 36 years). The terminal phase was one of continuous malfunction whose duration averaged 10.3 months (minimum 5 weeks maximum 3 years). Of the 7 cases in which the affection had been obstinate and progressive since its inception the duration averaged 3.4 months (minimum 6 weeks maximum 6 months).

Seventeen cases gave an early history of dyspepsia as commonly associated with catarrhal cholecystitis or cholelithiasis. Not rarely did these attacks bear definite relationship to an acute infectious disease (1 typhoid 3 pneumonia 1 malaria). Anorexia occurred in 14 patients and the food desire lessened in 5. Four cases showed no abnormality.

The average weight loss was 28 pounds the minimum was 15 and the maximum 60 pounds. Eleven cases showed distressing constipation, there were 4 cases of normal frequency, 8 cases of diarrhoea. Nocturnal diarrhoea seemed an impor-

tant symptom and especially noticeable when the gall bladder malignancy has invaded the pancreas. Fifteen cases showed stools indicating interference with the bile flow. Nine of these were definitely cholic. Eleven cases showed bile pigment in the urine. Jaundice was manifested in 14 patients. Of these 7 showed itching of the skin or distressing anal pruritus.

Rise of temperature occurred in 5 patients; the maximum 102.3.

Some degree of abdominal discomfort was experienced in 10 cases; severe pain in 6 cases and sharp prostration colic like attacks requiring operations in 5 instances. The distress was continuous in 4 cases and intermittent in 11. In patients having general epigastric pain in 5 cases discomfort was in the right upper abdomen; in 1 patient, one case each at the right costovertebral region of the navel and xiphoid. In 11 instances the vague general epigastric pain in the lower region. The average stay transferred pain in 4 cases. The order of frequency of transmission was the right back, right shoulder, the teeth, the left shoulder, the left arm, the left epigastrium. Maximum distress was felt shortly after taking food; sudden hangings followed after jolting or jar.

Abdominal tenderness occurred in 10 cases and was usually in the right upper quadrant; in the epigastrium.

Abdominal tenderness occurred in 7 cases and consisted in the right upper abdomen. In 11 cases there was costovertebral tenderness in the right at the xiphoid as well as upper navel. Secondary tenderness was present in 10 cases.

Intolerance of food occurred in 10 cases. Constipation usually followed the symptoms. In 10 cases there was flatulent epigastric tenderness. In 10 cases there was flatulent epigastric tenderness. In 10 cases there was flatulent epigastric tenderness.

The data test all as valuable in cases. Persistent elevation of reticulocytes occurred in 5 cases. A free HCl was present in 6 cases. There were 6 instances of a high hyd. The average total acidity was 3. Chemically the blood as a source of 6 patients. Lactic acid occurred in 5 cases. Microscopically, at least, in 5 cases.

Operation findings showed a nodule in the fundus or body of the gall bladder in 4 cases. The other cases showed involvement of the whole gall bladder with invasion of adjacent organs. Histologically the lesion was constantly carcinoma of the columnar or squamous cell type. Gallstones occurred in 16 cases. Adjuvant therapy was employed following the lymph nodes in 5 cases. The lesser nodes of the pancreas in 2 cases. The stomach in 1 case. Each the omentum in 1 case. Hepatic involvement of the liver and peritoneal lymph tissue.

I W BACH

J Obs n J H Th Pre ent on of the Recurrence of Symptoms Following Operations for Gall Stones

Recurrence of symptoms following gallstone operations is more frequent than is generally supposed to be the case.

Reformation of stones after cholecystectomy occurs from retention of infected contents rather than from leaving gall stones behind at the primary operation.

Route of gallstone operations should be made more thorough and complete by the use of adequate incisions in cholecystectomy and by accurate exploration of the duct.

When the common duct shows marked dilatation shall be opened and explored and special attention should be given to the terminal portion of the duct for the detection of calculi and constrictions. The detached gallbladder from its bed on the liver acts as a tool and aids in making the exploration of the ducts complete.

EDWARD L. CORTELL

Cr p J P R Ind cati ns for Biliary Surgery in Gallbladder and Its Complications (I)

346

C. p. e. s. b. l. v. s. g. e. r. v. in Spain and says that the present treatment of the gallbladder and its complications is not ideal. He thinks that the treatment of the gallbladder and its complications should be based on the early diagnosis of the disease and the use of the most effective treatment. He thinks that the treatment of the gallbladder and its complications should be based on the early diagnosis of the disease and the use of the most effective treatment.

The conclusion of the patient's anatomy is important in deciding upon operation. The conclusion of the patient's anatomy is important in deciding upon operation. The conclusion of the patient's anatomy is important in deciding upon operation. The conclusion of the patient's anatomy is important in deciding upon operation. The conclusion of the patient's anatomy is important in deciding upon operation.

Giff'n H Z Spl nectomy Following Removal of Myelocytic Leukemia

The operation of removal of the spleen in cases of myelocytic leukemia has been extremely high (85 per cent). The remarkable remission brought about by adjuvant therapy after the splenectomy alone in the series reported from the Mayo Clinic encouraged the trial of splenectomy in a case at a time when the spleen is relatively small and the general condition of the patient good.

The spleen was removed in 18 instances after it had been reduced by radium. One patient died an operative mortality of 5 per cent. Nineteen of the twenty patients were operated upon during the first twenty months. Nine have since died, ten are living, most of them in very good condition. The total duration of the disease in eight of nine patients who have died was two years or more. The total duration of disease in six of the ten patients who are living is less than two years. It is fair to assume that the duration of disease bears the only definite relationship to the length of life after splenectomy. There is no definite variation from the life expectancy for the disease. Six of seven patients operated upon within the first six months of onset are living, but no conclusions can as yet be drawn from this fact. Four patients with a chronic type of the disease showed a total duration of the disease of from six to ten years.

It may be concluded that in certain chronic types of fibrous spleen and low leucocyte count splenectomy after proper reduction of the spleen may be warranted from the standpoint of the patient's comfort. In the author's opinion a review of the series at this time reveals no reason to believe that the duration of the disease is altered in any definite way by splenectomy.

MISCELLANEOUS

Arturo R. The Necessity for Complete Examination in Laparotomy (Necesidad de practicar un examen completo en los laparotomizados y de registrar minuciosamente todas las lesiones encontradas consecutivamente) *Rev Méd d Rosario* 1918 vi 473

Among 830 cases of abdominal disease treated by the author 312 were found to involve either the uterus or its adnexa or both. Of the remaining cases in 114 an appendicitis was combined with an utero adnexal lesion, appendicitis combined with an utero ovarian lesion in 48 cases, appendicitis combined with renal ptosis in 17 cases, renal ptosis combined with utero ovarian lesions in 1 case, hernia and enterations combined with other lesions such as ovarian cyst, appendicitis, etc. in 30 cases, other miscellaneous concomitant abdominal lesions in 31 cases.

The author believes that it is a common occurrence to find a combination of lesions within the abdomen and that this fact should be taken into account in order that the final results of an abdominal operation may be favorable.

There is a greater tendency in the abdomen than elsewhere in the body toward the co-existence of organic diseases and the symptoms arising from this coincidence of diseases is frequently the cause of grave diagnostic errors. A complete and minute clinical examination is not of itself sufficient to form an accurate diagnosis in addition, after opening the abdomen, a rapid survey of all the viscera should be made in order to confirm, amplify, or disprove the pre-operative diagnosis. The manipulations involved

in such an examination in the hands of a skilful surgeon are not dangerous for the patient nor contra-indicated except in prohibitive conditions. Such an examination indicates the benefit to be expected from operation and is moreover the best guarantee to the patient that surgical treatment has been complete.

When other lesions are found in addition to those diagnosed they can be dealt with at the same time or later if the patient's condition does not permit it at the time.

W. A. BRENNAN

Mayo W. J. Acute Perforations of the Abdominal Viscera *Surg Gynec & Obst* 1919 xxviii 8

Knowledge of acute perforations of the abdominal viscera had its origin largely in perforative appendicitis, although the first perforations studied were those of the stomach. To the late Reginald Fitz of Boston is due the earliest organized knowledge of three most important surgical conditions, the relation of appendicitis to general septic peritonitis, of perforations of the pancreas to fat necrosis, and of the diverticulum of Meckel its infections and perforations.

The slow process of developing a living pathology was taken up by the surgeon and little by little the ravages of the fatal septic peritonitis were separated from the cause. The profession began to see that not all perforations ended fatally and that many factors came into play which might permit of spontaneous recovery from any particular perforation. These factors concerned the quantity and virulence of the leakage from the perforating organ, the general resistance of the patient, and the local anatomic situation of the perforation with relation to the prospects of limiting by adhesions the spread of the contamination and resulting peritonitis. Especially those mechanical factors which prevent contamination of the small intestine with its peristalsis received merited attention. The dictum that cathartics kill the patient with acute perforations was generally accepted.

It can no longer be said that operation for perforation is done when a laparotomy is performed from the third to the sixth day of a generalized peritonitis. An operation however may be wise in order to remove a still active primary focus or secondary deposits of virulent infection in the hope of limiting the spread of the disease. Acute perforations of the abdominal viscera, then, so far as the peritoneum is concerned, may be divided into three stages: (1) the stage of contamination shown by more or less shock and localized pain and tenderness. This is followed by (2) the stage of reaction, it might be called the fatal stage of reaction, because so large a majority of patients with acute perforations slip by the stage of contamination in which they could have been safely operated upon into (3) the stage of general peritonitis.

There is a relationship between acute perforations of the gall bladder into the free peritoneal cavity and acute perforative appendicitis. The author has

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES
TENDONS CONDITIONS COMMONLY
FOUND IN THE EXTREMITIES

De Gauljeac H and Nathan M. Gunshot Wounds of the Spongy Bone Tissue (Les lésions de los spongieux par projectiles de guerre) *Rev de chir* Par 1918 15 345

The authors state that lesions of the spongy bone tissue have received little attention in the literature of war fractures. Of 1,400 wounded recently treated in their ambulance service apart from epiphyseal fractures and articular lesions they found 114 cases of simple wounds of the spongy tissue. Of these 7 were discovered only because of later complications which they set up. There have been several cases of severe septicæmia in this series and some deaths. The gravity of these lesions is frequently overlooked at the evacuation stations.

The authors discuss the pathology and point out the damage done by a projectile which penetrates or plows along the bone. These damages can only be observed after wide excision and the turning back of the periosteum. This is necessary in the treatment of all penetrating projectile wounds. Examination shows that a projectile causes disruption of the osseous tissues as in the soft parts. The fragile structure of the spongy tissue explains the extent and gravity of these lesions which soon give rise to hematoma. These injuries are contusions in the same sense as those of the soft parts. They differ only in the primarily massive character of the necrobiotic lesions which form favorable culture media for microbes.

In this type of lesion important both because of its extent and primary septicity there is very often a long period of latency. The slow evolution of these deep infections can be appreciated only after careful study and observation.

The prognosis is grave. Apart from local manifestations of which arthritis is the commonest there are general complications which may become chronic.

As regards surgical treatment experience has shown that periosteal decortication and wide excision of tissues is the only way to ensure healthy primary reunion. W. A. BRENNAN

Epstein J. Perodactylism Syndactylism and Cleft Extremities in a Child. *N Y M J* 1919 115 153

Epstein reports the case of a nine year old boy whose history and family history were absolutely negative as regards constitutional disease and family deformities.

The middle finger of the right hand was absent. There was union of the other fingers on each side thus dividing the hand into two parts with a wide

cleft between. One toe of the right foot was lacking the outer three toes being united. On the left foot there was an absence of two toes the outer two being united. Both were cleft. One testicle was undescended. The Wassermann reaction was doubtful. The neurological examination showed nothing abnormal. There was normal intelligence but he was very restless could not sit still and when not observed talked to himself and indulged in all kinds of grins and grimaces. He was much below his grade in school and was frequently expelled for vicious attacks on his schoolmates.

Maternal impressions had no bearing on this case as during the entire pregnancy the mother stated that in order to have a perfect baby she carefully avoided looking at anything abnormal or unusual and spent the period in almost complete seclusion.

The article is accompanied by radiographs which show the condition present. J. J. KURLANDER

Merrill W. J. Tarsal Torsion in Weight Bearing. *J Orthop Surg* 1919 1 33

The arrangement of the bones and soft parts of the foot is analogous to the principles of a suspension span the sustaining cables being the extrinsic muscles chiefly and to a lesser degree the intrinsic muscle. Thus the arch of the foot is flexible and slightly elastic due to the action of the muscles and ligaments. In the correction of static defects the attention should be directed chiefly to the soft parts. The physiological and mechanical integrity of the foot is altered or preserved proportionately as the forces are applied to it in the normal direction of weight bearing force or in planes deviating from the normal. Therefore the importance of alteration in the normal static relationship of legs thigh and pelvis must be reckoned with.

Normally the curve of the longitudinal arch is in a vertical plane. When pronation or flattening or both takes place the supporting power is diminished proportionately as the deviation. Increased strain is imparted to the sustaining soft parts. As the midtarsus and the proximal heads of the metatarsal bones are displaced medially inward rotation of the first four metatarsal bones takes place imparting a torsion stress to the metatarsal bones and the midtarsus and adds abnormal strain to the supporting ligaments. Pain varies proportionately as the degree of stress and the continuance of the extreme movement. Pain due to torsion of the tarsus is localized at the point of greatest stress and may be referred forward and may be continuous or periodical. The pain may set up muscle spasm of a severe degree. Inward torsion accompanies weak flaccid feet.

Outward torsion is found in feet more or less contracted. The torsion mechanism is the reverse of that of flaccid foot. The arch is increased the

author got bad results the patients complaining of ischiatic pressure and the apparatus slipping above the ischium in any movement of the patient which annulled the action of the apparatus. To prevent this the author placed a plaster jacket around the pelvis and the upper part of the thigh over the seat of fracture. When the plaster was dry contra-extension was applied and the Thomas splint then applied in the usual way being fixed high and solidly on the plaster cast by strong bandages or other means.

In the 3 cases treated there were 3 deaths which is not high considering the condition of these men when first treated. In two cases after fifteen days of treatment there was still 4 cm. of shortening. The others were either completely reduced or at the most showed only 1 to 2 cm. shortening on evacuation.

W. A. BRENNAN

Hurley V. and Weedon S. H. Treatment of Cases of Fractured Femur at a Base Hospital in France. *B. I. J. S. g.* 1919. 1:351

In a rather extensive paper embracing in detail the mechanics of treatment the results in 10 cases of fracture of the femur are herein presented. The cases were returned under observation until firm union was obtained. The work was carried out in special femur wards that were specially staffed.

The length of time between receipt of the wound and admission to the hospital varied from thirty-six hours to seven days. The case usually arrived with the limb in a straight Thomas splint. Incision of the wounds with varying completeness had been performed. The incompletely excised wounds caused great difficulties. Wounds from shell fragments were more severely infected than were those from bullets. Thirty-eight per cent of all deaths occurred within forty-eight hours after admission. Shock, gas gangrene and complications due to wounds elsewhere were the common causes of death.

After resting overnight the patient was sent to the X-ray room. Thereafter during the remainder of his treatment repeated X-ray control without disturbing the fracture was carried out.

Avoidance of too many general anesthetics is necessary as this means lowered resistance particularly to gas gangrene. According to the immediate treatment the cases are divided into four classes:

1. Simple fractures or those cases with clean wounds usually need no anesthetic.

2. Cases where the general condition is critical but where no indication for immediate operation exists.

3. When the knee joint is involved the limb is kept in absolute rest because of the danger of lightening infection.

4. In this class of cases it is necessary to anesthetize in order to examine and clean up wounds.

The indications for further operative work consist in (1) spreading sepsis or gas gangrene in incompletely excised wound (2) insufficient removal of bone fragments (3) vascular gangrene.

In making new incisions and they are usually necessary unfavorable sites must be avoided. The adductor and popliteal regions and the buttocks are unfavorable locations for drainage incisions because of the tendency for a spreading sepsis between deep fascial planes to occur and because of interference with the application of a Thomas splint. The incisions should be lateral parallel to the long axis. Rubber tissue is preferable to tubes for drainage material. Carrel-Dakin treatment is used only where all recesses of the wound cannot be explored.

Gas infections have usually occurred within a few hours after admission. Ninety per cent of all deaths within the first few days were due to this cause. Rapid amputation was the usual treatment carried out.

The authors feel that bone fragments should be freely excised. Removal promotes more rapid healing, better callus formation, less sclerosis of muscles and better functional results. Non-union in compound fractures of the femur in men of military age has been less than 1 per cent. Firm union will result even in the presence of a defect of three inches.

Vascular gangrene due either to trauma and thrombosis or to previous ligation of the vessels requires amputation. There is great danger of secondary hemorrhage in these cases.

The splint used will depend on the position and extent of the wounds in the soft parts and upon the site of the fracture. Thomas splints have been used in all cases except those with extensive wounds of the buttocks and posterior aspects of the thigh. In these cases a Hodgen splint has been applied until sufficient healing of the wound permitted the use of a Thomas splint. Better control of the femur is to be had with the latter splint.

In those cases in which because of associated wounds below the level of the fracture extension by adhesive strips is impossible calipers are used. The points of the caliper are driven about one-fourth of an inch into the bone over the most prominent points of the condyles. By this means subsequent disability of the knee joint is avoided because continuous movement of the joint during the after-treatment is possible.

In all cases a Sinclair wooden foot piece is applied to the foot of the fractured side in order to control the position of the foot.

After the splint has been adjusted and traction applied the limb is suspended by ropes from cross bars over the bed. The suspension is counterbalanced by having the cords placed over pulleys and attached to weights for the purpose of enabling the patient to raise the limb from the bed to permit access to his wounds. His body may be raised by a similarly arranged canvas sling.

It is necessary frequently to ascertain that the traction is continuous. The extension strips require frequent attention. Less traction is necessary in compound fractures than in simple because the shattering and loss of bone remove the usual

mechanical b t u c t o n s to reduction the po e of the mu c l s s d m shed because of dest u c t i o n and seps s

Limitat on of mo em nt i the k ee j nt d e entirely to immobil t n d s p p e s a p p l y b e n mass ge and act i mo em n t s e n t i t u t e d In compound fractures th s co d t n s m e c o m m o l y lue to infection and subseq t n c t n c t e of m s c l e s act i n on the jo t Th a t h s d v i s e g i t t e m p t i n to fo e h a j n t u d e r s t l e s t b e c a u s e of the d a n g e of l l t g u p f e c t n d l e c a s e s u c h t a t m n t d s t m p e t h e o d i t

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S c n l v h e m h a g e s u a l l y o c c u r s f r n t h e t e n t h t o t h e t e t h d y W h n t h f e m l u r t r y i s n o f e d r a p d m p t t t l e s i t e of the f r t u e d e l e O t h r e l g t o g r u e p a k n g s e m j e l

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S J W F t u o f t h N e c k f t h T m u B i J S J g l

S e p e t t h p a p e t l t h d e t s t f f i e m t l a t c r d t m b f c s o f b p t t d d l h m l f d e c d l y t b a l f e t h p l e s o t n f t n e g l t t h m l t l t h t h s t y p t f a t s h l b e t t l

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The results of this series of 40 cases showed only 9 which could be classified as good or for the rest the e p a t e n t s c a n a l l b o u t w i t h o u t g r e a t d i s c o m f o t r a l m p T h s s p p r o x i m a t e l y 23 p e r c e n t F v e r e s u b c a p t a l f a c t u r e s a n d f o u r w e r e o f t h e n t e r c h n t e r c t y p e O f t h e s u b c a p t a l t y p n a s t e d b y s a n d b a g s o n e i t h B u k s t e n a n d t h e e i t h s a n d b a g s a l o n e T h a e g e a g e f l l t h e p a t i e n t s w a s s i x t y o e y e a r s t h v u g t b e g f o u r t e e n a n d t h e o l d e s t l g h t g h t v r T h r e e c a s e s i s u b c a p t a l f a t u s t h s s o f 40 e r e f o r c b l y i m p a c t e d b y c t t d n g t h m e t h o d a n d t h e r e s u l t s

k n t f l e c s e s T h v a r e n o t c l a s i d t h t e k n g o d r e s u l t s

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y c a s e h e e u n o n s s p e c t e d a n d i s t o b m e d a t n i g h t I n o l d c e w i t h n o n S e v e b e l e t h p o b l e m i s b e s t c o r r e c t e d b y t h e B c k e t t p e a t i n E C R r e

McMurr y T P Operat e Treatm nt f Rup tur d Int rnal L t l Lig m nt f the Kn B i J S g 99 37

T h u t h o p e n t a e v e o f t h e a n a t o m y a d p h y s o f o f t h t n l l a t e r l i g a m e t h c h h d a b e s t h i c k e g f t h e p r t f t h e c a p l e s o f t h k e e j o i n t I t c n t s o f l a g

bundle of fibers running almost vertically downward from the femur to the tibia. The longer fibers are attached above on the inner aspect of the femur just below the adductor tubercle at the lower end to the inner aspect of the shaft of the tibia about one inch below the level of the knee joint. The deeper short fibers are similarly inserted close to the articular edges of the bone and are also attached to the inner surface of the internal semilunar cartilage.

That part of the ligament between the femoral and cartilage attachments is longer because there is more motion between these points than there is below the level of the cartilage. In complete extension the ligament is tense and permits no lateral mobility in the joint. When the joint is flexed lateral mobility can be obtained and this yielding takes place in the ligament above its attachment to the internal semilunar cartilage. This part of the ligament bears all strain thrown upon the inner side of the joint.

A blow upon the outer aspect of the fully extended knee may cause rupture of the ligament. Such rupture always occurs between the femoral and cartilaginous attachments of the ligament. Such an injury never displaces the cartilage because the strain is taken up by the femoral and tibial attachments. Strain thrown upon the flexed knee will very likely cause displacement of the cartilage with or without rupture of the ligament.

The diagnosis of the injury is based upon the loss of power of abduction of the leg on the fully extended thigh. Possibility of injury to the internal semilunar cartilage must be excluded because the unnecessary removal of this structure for an injury to the ligament aggravate rather than improves the condition.

The operation hitherto performed of shortening the ligament has proven satisfactory. Therefore the author has devised an operation to remedy the condition and has operated upon 10 cases with satisfactory results. No apparatus in the after treatment has been necessary.

If the internal semilunar cartilage has been detached from its tibial insertion it is first removed through the ordinary antero internal incision. Operation upon the ligament is performed with the leg flexed to an angle of 35 to 40° thereby removing the tension from the ligament.

The fascia holding down the sartorius tendon in a position slightly posterior to the joint is incised so as to allow the tendon freely to be advanced. A vertical slit is made in the femoral attachment of the ligament and a small wedge of bone is removed. The sartorius tendon is laid in this groove in such a manner that the part of the tendon between the femur and the tibia is quite tight. The tendon is held in the groove by sutures passing through the tendinous insertion and the periosteum. The outer surface of the ligament is then sacrificed and the ligament shortened by suturing together the adjacent scarified surfaces.

The knee joint is maintained in semifleexion in plaster for three months. This is necessary for success. Otherwise stretching of the ligament at the new insertion will occur. This change in position of the sartorius tendon interferes in no way with the normal movements of the leg and thigh.

J. R. BUCHBINDER

SURGERY OF THE BONES JOINTS ETC

Chutro Tibial Bone Graft (Greffe osseuse du tibia)
Bull et mém Soc de chir de Par 1918 LIV 1688

In the case of a soldier who died recently Chutro had the opportunity of examining the condition of a tibial bone graft which he had made in 1911. There had been a loss of substance of 6 cm between the superior epiphysis and the diaphysis. An osteoplastic graft 6 by 1 by 1 cm removed from the inner side was inserted.

Examination showed that the graft had developed considerably transversely (4 cm) and antero posteriorly (3 cm). The general form was that of an inverted cone. There was scarcely any line of demarcation between the graft and the epiphysis the two showing a common spongy tissue. The point of union of the diaphysis with the graft was formed by a bed of compact tissue 1 cm in thickness.

The graft was made by contact without resection of the sclerosed interposed tissue and examination of the specimen shows that this simple method obtains a good result. The graft lives and is reproductively like the bone of a child.

W. A. BRENNAN

Boeckel J. Bone Graft of the Femur Necrosis After Ten Months Followed by Union After Two Years (Greffe osseuse du fémur necrose du greffon après dix mois consolidation au bout de deux ans) *Lyon méd* 1918 CCXVII 552

Bone grafts in the tibia are common but femur grafts are rarely reported. In the case of a soldier with an old standing pseudarthrosis following a shell fracture wound in the middle third of the thigh Boeckel inserted a bone graft nearly 12 cm long removed from the fibula. It was covered with periosteum on its anterior face. At the end of eight months the graft necrosed for nearly its whole extent was extracted but the thigh appeared more solid. Between the two bone ends originally separated more than 8 cm a tract of thin bone could be seen radiologically uniting the fragments. The limb was kept in plaster. After two years there is perfect union and the man can walk without support.

The case shows that despite the death of the graft union can be obtained. The irritation produced seems to favor osteogenesis as several surgeons have remarked and the formation of callus though retarded is no less evident.

W. A. BRENNAN

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P t t d e c b d l l u s t r s the method of
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appaatus e l u l v e l y o n t h a t s e c t i o n o f the l m b
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 i m m o b i l i t a t i o n a r e u n n e c e s s a r y a d the p a t i e n t
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C r t n c s o p e a t e d u p o n b y t h i s m e t h o d a r e
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 The d r d e s u l t i r e a c h e d o n t h a e r a g e b e
 t e e t h e t e n t h a n d the t h i r t e t h d a y T h e
 o t t n e s t h e n r e m o e d a d r e p l a c e d b y a p l a s t e r
 a p p a r u s u n t i l s o l d i f a c a t i o n o f the b o n y c a l l u s
 o c c u r S t u d y o f t h c a s h s d e t m i n e d

I o r l t o o b t a n e l o n g a t o n o f 98 83 a d
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 the n l i t i o n f the t i s s u e s t e

S o f t p a r t o f a l i m b e g m e t a l n o r m a l l y
 s h o t e n e d f o r a l o n g p e o d c a b e b r u g h t b a c k
 t h p r i m a r y l e g t h t h u t n y a p p r e c i a b l e
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A p l a s t i c o t e o m y d o n e o u t s i d e the
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 f i c t n t s w o r k i n g a n d b l e t o o v e r c o m e g r e t
 t a n c e t h u t r i s k a n d i n a m a n n e r w h i c h i s
 b b t e t o l e a t d b y the p a t i e n t t h a n e x t e r n l
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S h u r g e o n c a n n o t d e f n t l y f the t i m e
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 C l n c a l l y the b e s t i n d e o f the t i m e w h e n t r a c t i o n
 r e a h e s the m i n u m l i m i t s o f t o l e r a n c e i s f u r
 h b l b y e a m n i n g t h c o n d i t i o n o f the v a s c u l r
 n d n r v o u s y s t e m o f the l i m b

W A B R E A N

St ndle A O t h o p e d R o n t u c t i n W k
 n the H a n d n d F o r e a r m \ I M J 98

The f l l o g c o n d i t i o s e r e d e a l t w t h
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I a b i l i t y t h e f o r e a r m i n i n f a n t l e
 p a l y s T h i s a t k e n c a r e o f b y t r n p o s t i o n
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 the a r m

C o l t o n o f p a l y c o r n i f l a m m a t o y w s t
 d p T h s s t r e t e d b y a r t h r o d e s s o b y a t h
 d e s c n n e c t v t h n t e s s e u s t a p l a t a t n
 t o s e c u r e t e n n o f the f i n e

3 D e h c a n m o v e m e n t o f the t h u m b c n
 s s t n g i n i m a b i l i t y t o p p s e o e t e d the t h u m b
 T h s a s t r e a t l b y a t e n p l s t y p e r a t

4 Intractable hyperextension deformity of the metacarpophalangeal joints not remediable by splint treatment or tenoplasty was improved by osteotomies of the metacarpals proximal to the joints
A STEINDLER

Patel Osteosynthesis with Exposed Plates (De l'ostéosynthèse avec plaque latérale) *Bull et mém Soc de chir de Par* 1918 xlv 185

In applying osteosynthesis to more than 100 war fractures there were 4 cases which Patel found to be of especial interest. In these the muscular and cutaneous losses were so great that it was not possible to cover the bone plate which had to remain fully exposed nevertheless consolidation was effected without difficulty. The histories are given.

The bones involved were the femur tibia and radius. Consolidation was effected on an average in about two months which is not more than in the case of covered plates. Although Patel thinks that the plates should be covered he thinks it well to record the fact that good results can be obtained in cases where the plate must be left exposed.

Patel also remarks that in these 4 cases the periosteum had totally disappeared from the exposed bone fragments. There was no necrosis in any case the bone merely took on a reddish discoloration became more tender and appeared more vascularized. In spite of this absence of periosteum consolidation was effected in all of the 4 cases reported.

W A BRINMAN

ORTHOPEDICS IN GENERAL

Grandon L R G Flatfoot *U S Nat M Bull* 1919 xlv 43

Weak foot pronated foot and flat foot should be treated as a physiological not an anatomical entity. From the practical side of function and treatment the human foot has no more fixed arch than the extended hand until the muscles make one. Substitute the phrase arching of the foot for arches of the foot and the mental attitude toward feet changes. Arch supports simply to restore the contour of the foot should be abolished. A roomy flexible shoe which allows all the twenty three interrelated joints of the foot to work is now supplied by the Army and Navy.

The perfect foot of a baby gives the complete print of a flat foot. The lumberjack or college athlete may have pronated feet and still do a thirty mile hike without fatigue. What the feet will do and not their appearance should be the test in admitting the recruit to service. Acute foot strain may be prevented by the addition of a few simple foot exercises to the daily setting up drill. If strain develops the treatment is simple rest for a few days with not too much soaking in hot water graduated exercise flexible shoes preferably oxfords. Obstinate cases may require stripping or rubber pongs under the arches for a short time.

The so called military stance (60 degrees) for the feet should be abolished.
L C DONNELLY

SURGERY OF THE SPINAL COLUMN AND CORD

Neuhof H Operative Treatment of Gunshot Wounds of the Spine with Grave Paralysis *J A M A* 1918 99 137

It is generally held that operations are contra-indicated in recent gunshot wounds of the spine when there is complete or almost complete paralysis and sensory loss below the level of the cord injury. A number of cases however have been reported of wounds in the neighborhood of the spine causing sometimes extreme paralysis without involvement of either the bone or dura. There are many cases in which hopeless cord destruction cannot be shown unequivocally by roentgen and clinical examination instances in which operation may reveal a partially severed contused or compressed cord. These patients should be given the benefit of doubt as to the completeness of the cord lesion and should be operated upon in the hope of encountering remedial conditions.

The author discusses a group of cases of gunshot wound of the spine in which the dura is intact in the presence of complete or almost complete paralysis the lesion in the cord being due to commotion or concussion or both combined. At autopsy in these cases there is seen a diffuse or focal necrosis in the affected part of the cord with a varying degree of

surrounding edema. The cord elements may or may not be destroyed at this level. In these cases there is a possibility of return of function. In injuries by shell fragments the chances of recovery from the wound are greatly reduced if a deep seated infection is added to the cord lesion. There may be fragments of bone or epidural clots directly compressing the dura the removal of which would aid in recovery and reduce the likelihood of infection. Prompt operation is indicated in these cases chiefly for the elimination of infection and not with the expectation of relieving pressure on the cord.

The wounds are excised in the usual manner and when X ray examination shows fractures of the spines or laminae or when an intradural hemorrhage is suspected laminectomy is done. The dura is not opened when there are no visible signs of a subdural lesion.

Four cases of gunshot wounds of the spine are reported in which paralysis was complete or almost complete and in which the dura was found to be intact. The spinal column was fractured in three cases but in only one of these was there any indication of direct pressure on the dura. There was no demonstrable bone injury in the fourth case.

I C 100

SURGERY OF THE NERVOUS SYSTEM

Burr J L and C t H S P elim nary Note
on In t g t ion upon 1 000 C n e u t e
C of I i p l a l N r Inj r y B t M J
9 8 3

In m k b v t i n s on a s s of e r e n j
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l t e l b e l () t t h t s y s t e m f c e
t k g d h t n e y () t h a t t r l d
i e l t h d b e i s t h t s c l a
t t l m j l l

I m k g e n t i n t h b s j i t s m l s
s h a d n l e s p e t d t n t e t l j o s t f
d l p s i t n f t l m l p r e n e f
c n t r a t m l a t r j h t h e l o c u r t t
t h m o n t h s f t j u y t h e t e c t e
s p r l y n l j t t l m u l t m r n h l
l a t t r h c h t h s k u l e s b l b s
l l y i s t e l l i n g f p d c m s g l v k i c l
s l j t i t n l l t l e n l t f k t h f
t h u l e t c P l p t l l t t l
f b o n l l s o n m t i p t l l y p l i
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u p o n P m o e m n t f t h l m l e n
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m m t o t t h l m l d e m o t t e t h l d l
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In k g s n v e m t n a s l l t t
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s t k g n o m n t l h h n g e
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L m t o t t h e m l e s e s t
f a t r v l l b t s l d s n l t u a l l
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u t l t t l t k t h t t u e f l
t t b l l k t u p d b t h s e
f t h s e t t l l

In m a k i n g t h e e l e c t r a l e m n a t o n t h t h e
n t r r p t l c u r r n t t h e p a t m u s t b e t h o u g h l y
a m n d s k m t t h a t i t s r s t a n c e m a y b e
t h l t p b l e C o t t u r e o f t h e m s c l e s i s
l t l l m p l i t u d e i f t h l m b s a r e c o l d i f
t h p t l l e s o f t h e p e p h e r a l n e v e s o r
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l i s l p o l o n e d a n d o f l a r g a m p l i t u d e
n l e s s o t n e b r i s k n h e a l t h y
m l h t h e l i m b s m a n d q u c k i t h
l m p l i t u d e n r l e c o n t r a c t u s i n s o m e
f t t a l e s

O f t h e t e x t e d l y t l e a u t h o r l e o n s o f t h e
l i s o c c u r r e d i n o s t a n c e s a n d e v e r y
t t i l t d o n e r y s l o The m u s c l o
s p l r s n u e d o t t i m e s a n d e t u r n o f
f e c t i t r s u t u r e m o r e r a p d t h a i n a n y
o t h e W h e t h e e v e w a s d i v i d e d i n t h e
j f f e a m l i n t a m e n t a f t e r u t r e a s
t l l i t l j f l e s o f t h e r t n f o m s e v e n
t e a h t m n t h t h g h m u c h n e o o d t i o n o f
e m t a d e t f s t

T h l n s i n j u r e l 4 t i m e A f t e
c u t r t h m e d l o r g r o u p n t h e f o e
m d l t v p o e r n f r o m s e v e t o
g h t t h s t h s m l m u s c l e s f t h a n d r
q l i t u r t t e n t v m o n t h R e d u c a t i o n
s e s a b g e t h b e n e t

I h e l r t f s a l g r a i s p r o d u c e d b y t h e
d l p n e t f s a r t e i n t h e n e r e b u n d l e a n d
l t h g h t h e t l o s m y b e s h i t t o t h e n a k e d e y e
t n c o p l l v t s q t e a f a c t o r i n p r o d c g
t l p n h c h m e t m e s d e v e l o p s A l o h l
u c t e e f n l e f e v i n g t h s c d t i n
l t h e g d u l c o n t r a t u e d c e a s u l e s s
t h l d j t h e d c m p l e t e e c t o n

I h e l v r c o e s f t h e l n a r n e r v e
f h j l t m C m p l e t r e t u n f
t t n t a d i n a n c a

T h t e a l p p l e t l a s m u c h m o r e f r e q u e n t l y
j u d t h t h e n t l a d l i k e t h e m s c u l

j l e d e p d l y
A t t e n e a i r t p h c d o m o t o r f u n c
t n t a n d t r o p h c u l e h e a l r e m a r k
a b l q k l y D p s e s i b l i t y e c v n e t t h e n a
c u r a t s t m t f t h e l i g h t t o u c h s e s

P W S t e

A d n A W T h S u g c l T e a t m n t f P r
g U l n P l y M t M d 9 8
4

T h u t h r t t t t h t j g e l a p r l y
l l l d t a h h h l b e e n c o g n e d
l t l r l y i n t r d u g l l v T h e p a l y s
f g l l y n d m f t d b y p a æ t h e s
n æ t h t p h n l a n i n c i n p a l y s
f t h m u l s p p l e d b t h u l a r n e A t
p e r t n f f m n l g e m n t o f t h e u l n a r n e r e

with an occasional nodule at the prominent portion of the elbow is found. The enlargement is due to an interstitial neuritis which results in the strangulation of neurons by the constricting fibrous tissue. The interstitial neuritis is produced by constant irritation or stretching of the ulnar nerve over bony prominences due to old fractures of the elbow or to the development of any bony spurs in the ulnar groove.

The surgical treatment consists of transferring the ulnar nerve to a new position anterior and internal to the inner condyle. The tendinous attachment of the inner head of the flexor carpi ulnaris as well as a few fibers of the common flexor tendon are

divided and re-sutured after the nerve has been transferred to its new position. The ulnar nerve is held in this position by a cylinder of fascia taken from the thigh. This fascia is sutured to the bicipital and deep fascia and covers the brachialis anticus and the common flexor tendon. If the loss of function is more than half the involved portion of the nerve is resected and followed by an end to end anastomosis if the loss of function is less than half. Longitudinal incisions are made through the epineurium and perineurium to release the remaining normal nerve fibers. In most patients the result of the treatment immediately checks paralysis and definitely improves function.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS ULCERS ABSCESSSES ETC

Itami S. An Investigation of the Power of Mesodermal Derivatives to Immunize Mice Against Transplantable Tumors. *J. Cancer Res. exptl.* 1918 iv 23

Itami has experimented with two mesodermal derivatives—muscle and lymph node—to determine whether any other tissues share with the lens, brain, cartilage and bone their inability to elicit a vigorous immunity. In order that the findings might not be vitiated by the presence of blood in these tissues the greatest care was taken not to injure large vessels during the removal of the material.

Summarizing his results the author states that preliminary treatment with normal tissues containing but few cells whether they be of ectodermal or mesodermal origin fails to induce immunity to transplantable carcinomata. Muscle also though this is more cellular is inactive for some reason at present unknown.

Lymph node on the contrary has the power to elicit a high resistance against transplantable carcinomata.

The mesodermal tissues investigated have no power to immunize against two connective tissue tumors employed, feline like the skin to protect against sarcoma. OTT M I DT

Vignolo Lutati C. Epithelioma Following Lupus Vulgaris and Lupus Erythematosus (Sull'epithelioma conseguente al lupus volgare ed al lupus eritematoso). *Gazzetta medica italiana* 1918 xx ix 655

The author discusses the degeneration of lupus into cancer. The general opinion is that while it is not unusual to see carcinoma developing from lupus vulgaris it is rare to observe an epithelioma develop from lupus erythematosus. The most important recent contribution on this subject is as by Dubreuil and Petges in 1909.

The case is reported of a woman who at the age of thirty-four showed the beginning of lupus erythematosus on her left cheek and nose. The author saw her again two years later when the lupus had become more intense and extended. Three years later she again came for treatment. The nose was then apparently healed with cicatricial atrophic areas but there were large patches on the cheek. The patient would not submit to treatment. Two years later she returned to the hospital with the soft parts of the nose and upper lip ulcerated and almost destroyed. Ulceration had spread all over the cheek and down to the lower lip. A diagnosis of carcinoma was confirmed histologically.

The case demonstrates that carcinoma can develop in cicatricial areas and that although lupus erythematosus rarely shows cancerous degeneration unquestionable cases exist. W. A. BRENNAN

Labbé M. Surgery of Diabetic Patients (La chirurgie chez le diabétiques). *Ann. de méd.* 1918 v 428

Labbé treats of the many points that arise in deciding upon a surgical operation in the case of a diabetic patient. His observations are based on his personal experience as well as upon the reports in literature.

The danger of operating upon diabetic patients arises from two principal causes: (1) the hyperglycemia which facilitates suppuration; (2) the acidosis which causes postoperative coma. This latter complication is particularly formidable in the case of diabetic patients with denutrition who already show acidosis. Severe operative traumatism accentuates it but the most important element is the anæsthetic. Of all anæsthetics chloroform is the most dangerous because it provokes a temporary acidosis even in patients not diabetic. Ether also is dangerous. As a general anæsthetic ethyl chloride seems to be best. Neither spinal nor local anæsthesia provokes acidosis.

The following deductions may be made from the general findings:

SURGERY OF THE NERVOUS SYSTEM

Bu w J L nd C te H S P l min y N t
on In t tions up n 1000 Con cut e
Ca f P lph l N Inju y B i M J
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t k ng d l t t e v t t t t l l
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t ns t l c p bl

I m k k im t th b n j ts mus l s
sk l l a e s f c t d n t e th jo itio f
v d l l ca p t f th l m l pr s e of
e t t mu l t phy h h occu sab ut
th m t t ju t th e i e t erve
s p r l y t t t l m l r r o r h r l
l t t p l c l g th sk n u l e s b l c
l l l h e l l f p d g l s sk c l r
sh r str t b t t l l a t i k th f
th u l t f l p t l a t i t f
t u s d l n o m i t sup r t l l f l
r C t l p e s u r e r e l p s t l h h
th p t t d b a b s t k s t o a
t l l g n l l s l p s s e t l f c l
to th f k p l e d b y the l
up P e m e t f th l n l s i e
st t s t i f e k y f t t f t t y
m t t f l e l b l t t th l d u l
u l s t l f t d

I m k g m at n s a s m l t t
b b f m l h l l u t t c r n h
e d u s e l t h l r u s a p p l e t h t
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th p r k t l g n t e l
th t t l l t m l y l t t l a n l
d at l t m t c m y e l l p g
s a c t l y n t e l

I m t f t the n l c s s u n s t
f t y l l t t d s n d m v b e t u l l y
m l d k n l l t h f l l c g d e d
a g a t f t k g the p s u e n f d p e s i
b l u l m t s l T h s h a l l s c
f k t p t l p t t l f s s u r f t
u b e b t n e d h n t h g h t d d l I
t h s m t l p u u s e l s t d d e d and
d h t l l h m k e s a c u r t e m p o n
p l f k t k t h a t the
l c l t l k l f t h p r t u n d

t l t l t h t t p t i t h a
p e n l t t l t t f l t o t h p t h e
f e e l t h p e l h t d e p o r l h t
b l t I d t t h d m i n t i n b l
i t y c m l j t d n d the s i e h p
th c k t t l l b the n s f t c l i t h
t h l t l t l l e e t h e t t f o l
t t i b b l k t c m p a e d b y the u e
f the e n t t h o n l

I m a k g the e l e t c a l e x a m i n a t i o n i t h the
t t u p t e l u r e n t the p a t m u s t b e t h o r o u g h l y
m l s k m o i s t s o t h t i t s e s t a c e m a y b e
t l l t p s i l e C o n t r a c t u e o f the m u s c l e s s
s l t h s m l l a m p l i t u d e o f the l i m b s r e c o l d i f
th t r t l l e o n s o f the p e r i p h e r a l n e r v e s o r
f t l l n l l a e b n i m m o b i l i z e d i n s p l i n t s f o r a
l o n t l o p o l n g e d a n d o f l a r g e a m p l i t u d e
n r g l e s o f n e r e s b r i s k i n h e a l t h y
m u l h r e the l i m b s w a r m a n d q u i c k i t h
n e i m p l i t u d e e l l e c t r a c t u r e s i n s o m e
f n c t l e

(O) t t s t r e t e l b y the a u t h o r l e o n s o f the
e r l t c u r e d i q s t n e s a n d r e c o v e r y
a f t m p l e t d s i o s v e y l T h e m u s c l o
p l n e n j u r e d 2 4 t i m e a n d r e t u r n o f
f t n t t u r e a s m e r p d t h n n a n y
t h r n W l the n e e w a s d i v i d e d n the
u p p l t m o v e m e n t a f t e r u t a s
n t d t h d f l o r s o f the r i s t i n f r o m s e e n
t t l t n o t i s t h u h m u c h i n c o o d a t i o n o f
m m t s e l e n t a t f i r s t

I h l n j u r d 4 t i m e A f t e r
t u t u the n d n l o r g r o u p the f o e
m e d l t y p o e r i n f r o m s e n t o
g h t i t h t l e m l l m u s c l e o f t h h a n d e
q l f u r t t t e t m o n t h s R e e d u c a t n
s v b g e t h b e n e f t

The s y n o e o f c u l g r a s p o d u c e d b y the
d l p m e t f t s u e n the n e v e b u n d l e a n d
l t h u c h the t b s s m y b e s l i g h t t o t h n a k e d e y e
t m e o p c l t s q u e a f a c t n p r o d u c i n g
t h v e p l h m t i m e s d e v e l o p s A l c o h o l
j c t o s e f a a l n r e l i e v i n g t h s c n d t n
a l the g d l c t r a c t u r e a n d i c e a s i n g u s e f s
f the h d j u t d c o m p l e t e s e c t i o

I h e l y r e c o v e r i e s o f the u l a n r e v e
l h j f 3 2 t i m s C o m p l e t e r e t u r n o f
f t r a n t n o t e d i n a c e

T h t r a n s p l a n t a s m u c h m o e f r e q u e n t l y
j u e d t h a n the i t e r n l a d l i k e the m u s c l o
l l e v e d v e y p d l y

A t t e e e p a t t p h c a n d a s o m o t o r f u n c
t e e t t n d t r o p h c u l c s h e a l r e m a r k
b l y q k l y D e p n b l t y r e c o e r s n e x t t h e n a n
a c u a t t o f the l i g h t t o u c h s n s e

P W S t

A d o n A W T i S u g a l T r i m n t f P
g i U l n P a l y s s M o l M d 9 8
4 5

The a u t h t r a t e t h t p r s s i u l r p r l y t
l u n l o n l i t i o n h c h h a s l a b e e r g n e d
b t h l y b n t r e t e l s u g i c a l l y T h e p a r l y s s
p r g r e s l y r a n d m a n f e d b y p a e s t h e s a s
n e t h e s s a t o p h y a n n e a s i n p r a l y
o f the m u l e s u p p l d b y the u l n r n e r v e A t
o p e r a t n f u f r m e l a r g m e n t o f the u l a n r

products of the protoplasm. The greater the amount of photochange or the more the products differ from the protoplasm from which they were formed (i. e. the more foreign they are) the greater will be the effect produced. Thus the biological action of radiation may increase with increasing exposure although not necessarily by any constant ratio.

In order to evaluate the effect produced it may be postulated that these substances enter into reaction with the constituents of the cells and through the altered sequence of metabolic changes may affect the whole organism. It becomes at once evident that such an interaction depends not only upon the nature of the formed substance but quite as much upon the structure and nature of the protoplasm. As a result the discouraging conclusion is arrived at that for the full and complete solution of the problems it is essential to know the constitution of the cell substances and the relation of this constitution to various physiological functions. On the other hand it seems that such a statement of the problem leaves the door open for further research demanding investigations into the field of cytology and physiology. In the art of using radiation skillfully there is possessed a new tool with unique and invaluable possibilities for scientific investigation. The results of these investigations will be contributions not only to the nature of the action of radiation but also to the nature of life processes. **GEORGE E. BEILBY**

Rouhier. Note upon the Untransportable Cases of Shock in an Army Corps During the Battles of May 27 and July 15 1918. (Note sur les chocs é intransportables d'après d'armée pendant les opérations militaires du 27 mai et du 15 juillet 1918). *Bull. et mém. Soc. de chir. de Par.* 918 xlv 1785

Rouhier's report on a number of cases of war shock tended to demonstrate that shock is the result of an intoxication originating in the traumatized area and that everything which tends to retard the absorption of the toxins ligature of the limb for example or its removal attenuates or eliminates shock. The nature of the toxin remains to be determined and the researches already undertaken have given important indications by showing that a true azotæmia exists and that the nitrogen accumulated in the blood is residual nitrogen. The question will not however be settled until it is possible to reproduce the symptoms of shock experimentally by the injection of certain substances into animals.

The classic theory that shock was a nervous complication due to violent or prolonged traumatic action on the nerve centers is becoming more and more abandoned.

The question of therapeutics can be approached from two sides from the point of view of prophylaxis and from the point of view of the treatment of the effects. Prophylaxis would consist of the early prevention of dissemination of toxic products from the traumatized area. On this hypothesis certain attempts have already been made by the early use of fixing fluids coagulating the albumins and re-

moving their noxiousness also by the very early use of hæmostatic bands. The band not only stops hæmorrhage but obstructs the return circulation and prevents dissemination of the toxins. All surgery whether amputations or extensive excisions should be done before the band is removed.

Rouhier remarks that shock is especially observed in cases of multiple shell wounds even when these are limited to the soft parts that the intensity of the shock is in relation to the quantity of muscular tissue injured and that wounds in the lower limbs are more prone to cause shock.

Rouhier further remarks that in the case of purely muscular wounds when a muscular mass has been torn away with the skin covering it shock is very little or nil but when the injured muscular area communicates with the exterior by only a narrow orifice which is the usual case in multiple wounds caused by pieces of shell or grenades infection is rapid and shock is intense. While recognizing the importance of intoxication in shock Rouhier gives due weight to the factors of fatigue hæmorrhage cold etc. as well as to the prior condition of the splanchnic organs.

In discussing this report Delbet referred to certain experimental researches in which muscular autolysates were injected. One of the findings was the development of an intense polypnœa. Henderson considers that this polypnœa is the cause of shock i. e. the acipnia theory but it is only a symptom of bulbar intoxication.

W. A. BRENNAN

BLOOD

Carr J. G. and Moorhead L. D. Gaucher Type of Splenomegaly. Report of a Case. *J. Ill. M.* 155 19 9 1919

A case of splenomegaly is reported in a Polish male forty six years of age who had noticed a tumor in the left upper abdomen when nine years old. This mass gradually increased in size until on admittance to the Cook County Hospital in November 1915 it extended to within 5 cm. of the symphysis pubis and beyond the median line to the right of the umbilicus. There was no pain or tenderness present but the great size of the tumor caused difficulty in respiration. The liver was enlarged to 10 cm. below the right costal margin. Blood examination revealed a marked leucopœnia and secondary anemia.

In May 1916 the patient was operated upon and a spleen weighing eleven pounds was removed. Several blood transfusions were performed both before and after operation. The liver showed a fatty and atrophic cirrhosis. On section the spleen showed large irregular alveolar spaces representing the greatly dilated venous sinuses filled with the peculiar large cells with relatively small nuclei sometimes single sometimes multiple characteristic of the Gaucher type of splenomegaly. The patient made an uneventful recovery.

lack of lasting improvement. A sodium citrate transfusion of 1000 ccm of blood was given in the guise of a medicated saline infusion. The improvement was so marked that the transfusion was repeated in three weeks. Two years have elapsed since then the woman is up and about attending to her housework and apparently perfectly well.

In four cases of lymphatic leukaemia six transfusions were given and one transfusion in a case of myelogenous leukaemia. While the transfusions did not result in cure in these cases they gave a stay of proceedings in some instances.

Hæmorrhagic conditions for which transfusion is employed include (a) hæmophilia (b) hæmorrhagic diseases of the newborn (c) purpura and (d) secondary hæmorrhagic diseases complicating such conditions as prolonged jaundice grave anæmias leukaemia and severe infections. He has found the sodium citrate method especially adapted to these conditions.

He has found transfusion of value as a preliminary step to severe operations on undernourished patients.

The possibility that blood from a healthy donor may be employed to overcome the effects of various types of poisons was one of the earliest great expectations from transfusions. The poisons may be subdivided as follows:

1 Bacterial infections with bacteraemia as in endocarditis infections with pyogenic organisms typhoid etc. toxæmia only as in diphtheria pertussis etc.

Chemical as in diabetic coma acute gas poisoning and acute yellow atrophy of the liver.

Five patients suffering from subacute infective endocarditis were transfused. None of the patients ultimately recovered but the transfusions had a very marked beneficial effect on all of them and undoubtedly prolonged life.

As for infections with pyogenic bacteria there was a case of staphylococcus bacteraemia associated with osteomyelitis. The patient was a boy of twelve with a bad infection of the tibia that resulted in a severe grade of anæmia. Resection of the lower end of the tibia did not bring about cure. Three weeks later a transfusion of 600 ccm of blood was undertaken with splendid results. In six weeks the boy gained 16 pounds in weight the hæmoglobin went up from 39 to 65 per cent and the leg was practically healed.

In two cases of hæmolytic streptococcus sepsis associated with intra uterine infection repeated transfusions gave only a slight temporary improvement and the infections progressed to a fatal issue. A similar result occurred in a child of five with diphtheria who had received a large dose of antitoxin but in spite of which showed evidences of a severe toxæmia. He was bled and then transfused with 300 ccm of citrated blood. No change in the condition was noted and the patient died.

As for chemical poisons the author's experience was limited.

It is his conclusion that the sodium citrate method should except only in special instances be adopted as the routine method since both the clinical and the laboratory findings support this view.

G. W. HOCHREIN

Guillaume A. C. Blood Transfusion and the Application of Recent Methods in the Treatment of Obstetrical Hemorrhage (La transfusion du sang les nouvelles méthodes envisagées dans leurs applications au traitement des hémorragies en obstétrique) *Arch. mens. d'obst. et de gynéc.* Par 1918 vii 17.

Guillaume reviews the history indications and methods of blood transfusion with particular view to its application and value in obstetrics. The sudden and alarming hæmorrhages occurring in the course of pregnancy and labor necessarily call for a method with a simple technique which is applicable for use not only in a hospital but also in the home of the patient. The various methods now in vogue are considered from this standpoint and include the use of citrated and parafornated mixtures for obviating accidents of coagulation.

Guillaume thinks that in spite of the progress made during the last few years there is still something lacking in all the methods of transfusion which have been proposed. They need a closer approximation to pathological indications. There are three facts which arrest the attention:

1 Immediate death in hæmorrhage is especially due to failure of circulating blood.

Death occurring secondarily in the post hæmorrhagic period cannot be attributed to the lack of serum alone but rather to hæmatopoietic complications.

3 If artificial serum or blood serum raises the blood pressure and increases the amount of circulating fluid they have no action on hæmatopoiesis on the other hand the red and white corpuscles furnish those elements which stimulate the hæmatopoietic functions.

The conclusion drawn from those observed facts is that there are two important factors in restoration: the volume of the transfused blood and the number of blood cells.

Transfusion of whole blood would appear to be the method of choice if it were established that there was a strict relationship between the number of cells and the volume of liquid holding them in suspension. But clinical and experimental results show that this is not so. Hædon and also Blechmann have shown that the number of cells transfused and the quantity of serum are not in the same relation as exists in the blood and that the proportion of cells does not reach that existing in normal blood. Guillaume therefore thinks that a dilution of blood in serum is of all the methods destined to combat hæmorrhage that best calculated to solve the problem. But the exact proportion of the injected mixture of blood plus serum is yet to be determined.

at the head of a limb almost always results in gangrene. The fact that both these cases were followed by excellent results is the reason that the author reports them.

W. A. BRENNAN

POISONS

Chauvin E. Note upon Localized Tetanus of the Limbs (Note sur le tétanos localisé des membres). *Rev de chir.* Par. 1918 lv 32.

Several cases of tetanus limited to the limbs and not becoming generalized have been reported since the beginning of the war. The author reports 5 cases in detail. Etiologically there are three facts met with in these cases: (1) the tetanus is subsequent to a wound in the affected limb and contraction is established where infection is localized; (2) the appearance of the tetanus is generally late; (3) in the great majority of cases the patient had received one or several injections of antitetanic serum. Although a few cases are recorded prior to serotherapy, the multiplication of cases since the employment of serum furnishes a reason for considering localized tetanus a consequence of preventive serotherapy.

Diffusion of the tetanus toxin through the body fluids is made impossible by the circulating antitoxins.

If immunization of the system is incomplete and the tissues immediately surrounding the traumatized region are permeable a period of more or less severe general infection may precede the secondarily localized form or accompany it during its whole duration.

W. A. BRENNAN

Marquis E., Clagne R. and Didier R. Reactions in Gas Gangrene (Contribution à l'étude des réactions de l'organisme dans la gangrène gazeuse). *Bull. Soc. Ch. d. P.* 1918 l 1645.

In a number of cases of gas gangrene the authors have made a detailed study of the blood and urine either immediately on receipt of the patient or during the course of the case.

In the blood a marked hypokalemia is always found. The average gives 66 per thousand and is much below the normal figure of 3145 per thousand. This hypokalemia is proportional to the intensity of the infection and the lower it is the more unfavorable is the prognosis. In the same patient it varies according to the intensity of the toxemia. The authors' results confirm Wright's findings.

As regards the urine of patients with gas gangrene the authors find that the quantity is always below normal, that the coloration is deeper than normal, approaching a reddish brown, no traces of albumin or sugar have been found, there is a slight hyperacidity, the acidosis of diabetic coma was not observed.

The mean urogenic coefficient of all patients examined was 13 per cent, as against the normal coefficient of 65 per cent. This indicates an acid intoxication due to hepatic insufficiency. As the

cases recover this coefficient tends toward the normal.

Gas gangrene cases show decided hyperammonuria resulting from the inability of the liver to convert ammonium into urea. There is also an intense urobilinuria.

The increased urogenic coefficient, the hyperammonuria and the absence of glycuronic products show the important part played by the liver in the defense of the body during the course of gas gangrene.

The authors conclude therefore that it is the efficiency or inefficiency of the liver which finally determines the susceptibility of the body to gangrene toxin and their clinical observations seem to verify this.

W. A. BRENNAN

Govaerts P. Some Experimental Findings on the Significance of Septicæmias (Quelques données expérimentales sur la signification des septicémies). *Presse méd.* Par. 1918 xxvi 597.

Govaerts refers to Bull's experimental studies on the inoculation of animals and his finding that it is only agglutination which protects an animal against a septicæmic infection. The author has made further researches along the same lines. He finds some difference in the interpretation of the results observed by Bull. Thus on injecting a rabbit with the staphylococcus the number of colonies per cubic centimeter of blood undergoes an extremely rapid fall in the first minutes following the injection. Immediately after the injection the microbes are numerous and isolated. Later they become massed together with the blood platelets; this is not a true agglutination but rather an arresting of the microbes by the blood platelets owing to an affinity for them.

If the pneumococcus is injected into the veins of a rabbit there is no such action of the platelets in gathering up the microbes which remain free and isolated in the circulation, however on making a pneumococcal injection in the same way in a dog the masses of platelets with the arrested microbes are found and the pneumococci disappear from the circulation. Hence there is a species of natural immunity and the blood platelets have a very important function somewhat analogous to that of the phagocytes.

Applying the experimental findings to the study of septicæmia the author states that septicæmia is not due to the virulent nature of the invading microbe but is rather due to the stability which it is able to maintain in the blood. If a microbe is able to remain stable against the immunizing action of the blood platelets it fulfils the essential condition for septicæmic infection. The degree of intensity of a septicæmia depends upon the aptitude of the microbe to multiply in the blood.

The author discusses the causes which determine stability or instability of a microbe in the circulating blood. These depend on the conditions concerning the microbe as well as the blood platelets, a special function of which appears to be to fasten upon

A sample instrumentat on for rapid and suffic ent transf on is obtained by a modificat on of the Jeanb au ampulla or the Folley tube nreas ng their capacity and it is not neces ary to use paraffin or sod um citr t as phy ologic se um 8 per 1000 serves pefectly fo th cell and h d rs coagulation An ampulla rst partly filled ith erum receives the qu nt ty of bl od from the dono The m ture l k n and the ampulla contents can be im med t ly r m y ted The operation s con der bly impl h d a t not nec s a y to remove f om th don r a olum f blood n c s ry to re tall h the l l d pr but only th numb r of ll n r y f bl d n atio

W A B N N N

BLOOD AND LYMPH VESSELS

B b n k l J r n d H t z J T aum t Oblit ti n
f L Art l l t t t t t t
m t i y i l d l d P 9 8
45

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n k m y f th ound l d h v e rot d the
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u f j r i l r l b Eighty ht a e re
m d h n j u r t th p p i l r t e r v
f the f f l b d b m i l r n th l e

l l t r f l l that r t e r i a l i t e r a t i o n re
l t l y f r q t n l m b o d In om es
t l h l h e t t d n m e d t e o r
l r v l t l u t r o y t t h e h m o r h e
l t f f l t a n u l y W h n a u b i n t
d t f l t h p m e b l e t t r o u
L r l e n t m t l l r t h r e re
e t f l e r u t h h t h t r y i
l a r d l l a b l l a f t h e r e l t h i
t h e n l r y b i t t o f n u m r l l t i l
b h e h h m b t a b l h m t f u l
t d f l l t h e m y b b e f p p h c
p l t f t e i g h t e n t o t n t y f h o a f t r
n j u r y

l t l t t p p l m b l c f the a d l p u l s e
p l l y f q t t e i n j u v t o t l l a r y o
h m l e l s m l a l y i n the l l m b p d a l
o r t l l p u l a t a r e b n t f t p p l t l o r
i m a l n j u r

G n a l l y t y t l p e u e i f o d a k e n e d
n t h e d e A d f e r n g r e t e r t h a n 15
m H g b e t e e n t h y s t l p r r of the op
p t l m b p p r t l e p a t h g m n e f a n
o b l i t t y f the p p l e a t e a l t u k of the
l m b f a n e i m a r b e e l u d d

F i n d g the a m p l i t u d e of the o l l t o b y the
P a h o p p t u u t b l e m t h d o f d e t t n g
c u l t t l l B u t h t h b a t h t e s t
c e a v p l m n t T h i a g o d m e a n t
l i f f r t i t e l e t e e n o b l i t e r a t o n n d r t e r i a l
p m h t h r i o n l y a s c o t r i t o n the
o c i l l a t o n p p m e t h o s of th h e a l t h y l m b
b u t h e t h b l t t n t h e o c i l l a t i o n s a r e n o t

modified or a r e o l y v e r y s l g h t l y m o d i f i e d d u r n n
w e e k s o m o n t h s

I n m a n y c a s e s e p e c i a l l y i n the l o w e r l m b the
c i r c u l a t o n b e c o m e s a l m o s t n o r m a l b u t t h e r e a r e
c a s e s h e r e the c i r c u l a t o n r e m a i n s f a r f r o m n o r m a l
t h e b e i n g a d i f f e r e n c e of f r o m 3 t o 6 c m H g b e
t w e e n the p e s s u r e s w i t h v e r y l a e k a m p l i t u d e of
o s l l a t i o s e t c I n the r e c v e r e d c a s e s the e i s
u n d u b t e d l y a d e v e l o p m e n t of c o l l a t e r a l a n a s t o m o s e s
t h e f a i l u r e of t h d e v e l o p m e n t b n the c a u s e
of the p e o r e r c i r c u l a t o n o t h e r c a s e s

L t the a u t h o r s w i l l t r e a t of the f u n c t i o n a l
t u r b n c e d u t o t r a u m a t i c a r t e r i a l o b l i t e r a t o n s
T h e r e p e n t a r t c l e i s a c c m p a n y e d b y a n m b e r of
t l l g i n the d e t a i l s of the v a s c u l a r l e o n s n
t h a r e t h e y s t u d d I n the u p p e r l m b c a s e s
t h e u b e l a n a r t e r y a s o c c l u d d t w i c e the i l l a r y
a n d the h u m e r a l a r t e r y 50 t m I n the l o w e r
l m l c a s e s the p o p l i t e a l a n d f e m o r a l a r t e r y w e r e
h c l u d d o t m e s W A B R E A

V l l n d e C T a u m a t i c A n e u r i s m f t h e E
t n a l l i A t e r y (A e m e t m t q d
i t l q t) P h g 918

I l l a r s e c e V i l l a n d r e r e c e n t l y o p e r a t e d u p
n t a n u r s i n s m e of the e t e r n a l i l a c a r t e r y
t h e t h r of the a l l a r y a r t e y i m m e d i a t e l y b e l o w
t h l l

T h e l i c a n e u r i s m a s i m m d i a t e l y a b o v the
e p u r s t c a r t e r y c o v e n g the a n t e r i o r f a c e of t h
a r t v l e i n T h s a c i n v o l v e d a p a r t of the w a l l
f t h l e c e i n A q u a d u p l e l g a t u r e w a s n e c e s s a r y
a s f t h a d b e e n a n t e r i o v e u s a n e u r i s m T h e
p a s t c a n d d e e p l c c i r c u m f e x a l s o h a d t o b e
t e d H e m s t a s i s a s p e r f e c t a n d the a n e u r i s m a l
s a c t a l l y r e m o v d T h e a n e u r i s m a s e m
b e d d e d the s h e a t h of the p s o a s m u s c l e a n d s t r o g i v
a d h e n t to the b l a d d r i n d d u c t u s d e f e r e n I t
a s y d i f f i c u l t t o s l a t e the b a c v e n

T o e r c h the s i t e of the a l l a v a n e u r i s m a t e m
p o v s e c t i o n of the l a v i c l e w a s n e c e s s a r y T h e
s u b c l a v i a n m u s c l e a s w e l l a s the c l a v i c o a l l a y
p o n e u r o i s a n d l e s s e r p e c t o l w e r e a l s o s e c t o n e d
T h i s l a r g e o p e n p e r m i t t e d the p l a c i g of l g a
t u r e s o n the s b e l a v i a n a n d a x i l l a v I o t i o of
the b r a c h l p l e u s n e r v e s v e r y d i f f i c u l t V e o u s
a n d t e r l g a t u r e s e r c n e c e s s a r y a n d a s i n the
p e u s a s e q u a d r u p l e l g t u e a s m a d e v t h
p t l r e c t i o n of the s a c I t w a s n o t n e c e s s a r y t
l g a t e the c o l l a t e r a l a t e r i e s H e m o s t a s i s v s p e r
f c t

I n t h e s e o p e a t n s the a u t h o r f o u n d i t i m p s b l e
t o a p p l y the c o n s e r v a t i v e m e t h o d s of a n e u s m o r r h
p h y of M a t a s o r of a n g r r h a p h y of S o u b o t t i c h
R e s e c t i o n of a v a s c u l s m e n t s n e c e s a r y t
a v o i d e c u r r e n c e a n d t o p r o t e c t t h n r v e s i n the
v e n t y T h e e w a s n o g a n g r e n T h e a u t h
t h n k t h t h v s d u e t o the f c t t h a t b o t h a n e u
i m s e r e o l d a n d t h a t c o l l a t r a l i r c u l a t o s
w e l l e s t a b l i s h e d

A u s m s f t h e t e r l i l i a c a r e n o t f r e q u e n t l y
e e n a n d q u d r u p l e l t u r e of the a r t e r y a d v e

used to generate X rays. The dose was necessarily indefinite and the only measure of the comparative amount of the X rays received by each animal consists in the constant established by the fact that the mice included in each experiment were exposed simultaneously and for the same length of time. These experiments are included because they demonstrated the tendency of the circulating lymphocytes to decrease in number after animals had been exposed to the X rays generated by gas tubes and because this decrease was in many ways similar to that observed in other experiments. Furthermore, there is a definite relation between the response of the various animals in a series as determined by blood counts to X ray treatment.

The immediate effect of the X rays in the dosage employed in these experiments is a sudden decrease in the circulating lymphocytes evident in every curve and table in the series. The curves all represent total numbers of lymphocytes small and large varieties combined per cmm of blood. When the lymphocytes are studied in terms of percentage of total white blood cells, the results are not so striking and while in most instances there is a definite fall in percentages as well as in actual numbers of these cells after X ray treatment, an occasional instance is encountered where the change is slight or absent.

These studies bring out the following summary:

1. X rays in large doses affect the lymphocytes before any of the other circulating cells.

There is a sharp fall in the total number of circulating lymphocytes which is complete forty-eight hours after X ray treatment.

3. Following the immediate decrease in the circulating lymphocytes there is a primary rise followed by another fall which in turn is followed by a permanent rise of these cells to normal.

4. The effect of the X rays on different species of animals varies considerably but in those studied the selective action on the lymphocytes was in all instances apparent.

5. When several animals of the same species are given the same dose of X rays, the effect on the circulating lymphocytes seems to be quantitatively parallel when determined by blood counts.

6. The polymorphonuclear neutrophilic leukocytes when affected at all, increase in number immediately after the administration of the X rays and then tend to decrease below their normal level. This decrease is followed by a return to normal many days before the lymphocytes reach their original level.

7. The other cells of the blood follow the neutrophilic curve.

8. Percentage figures as determined by differential blood counts do not give an accurate indication of the effect of the X rays. It is only when these are multiplied by the total white blood count that a figure representing the total number of cells of the series per cmm of blood is obtained which varies to the stimulus in a constant manner, the variations being practically quantitative.

GEORGE E. BRILLEY

Thomas M. M. Taylor, H. D. and Witherbee
W. D. Studies on X Ray Effects Stimulative
Action on the Lymphocytes. *J. Exp. Med.*
1919, vol. 75.

The authors have reported on the destructive action of X rays on the circulating lymphocytes, confirming and extending the earlier work on this subject. It was noted by Murphy in his studies on X ray effects that while large doses destroyed a small dose of X rays would bring about a stimulation of the lymphocytes. This observation was later applied experimentally. In the earlier experiments the older type of X ray tube was used and it was practically impossible to establish a standard and uniform dose. With the introduction of the Coolidge tube the difficulty was eliminated to a large extent and there was an opportunity to check this observation and extend it.

Mice have not been used here as in the previous experiments for the reason that blood counts could not be made on these animals more frequently than once a week without causing too marked a fluctuation.

Brown rabbits of the same relative size were used in the nine experiments. All the animals were kept in separate cages. Several blood counts were made on these normal rabbits and they were then exposed to the ray of a Coolidge tube. A dose of low penetration was applied to the dorsal area; the spark gap measured seven eighths inch, the milliamperage was 25, the distance from the target to the back 8 inches and the time of exposure 30 minutes. The temperature 8 inches from the target was 31° C. In almost every case a blood count forty-eight hours after exposure showed a slight drop in the lymphocytes.

A comparative dose of filtered X rays was used also on a smaller number of brown rabbits (spark gap 6 inches, milliamperage 5, distance from the target to the back 10 inches, time 26 minutes and 57 seconds). The rays were filtered through 3 mm of aluminum. The animals were exposed in the same way over the dorsal area and kept under the same conditions as those of the preceding experiments.

As a result of these discussions the authors reached the following conclusions:

It is of interest in these experiments that the X ray dose used was of low penetration, the spark gap being under an inch. The use of a larger spark gap with apparently the same dose of X rays did not give a stimulation. This suggested that the effect on the lymphoid organs is not the result of a direct action of the rays but is secondary to changes brought about either in the circulating blood or in the superficial tissues. The amount of X rays penetrating the deeper structures with this dose must be infinitesimal.

Another question arises as to the nature of the energy generated by the X ray tube operated upon so small a spark gap. This point has not yet been taken up but it is conceivable that other factors than the pure X rays may play a part.

III Wounds of the hip joint

1 The general rules regarding the treatment of articular injuries are equally applicable to the hip. However the prognosis of wounds of the hip joint is not so good relatively as in the case of wounds of other large joints. The depth of the articulation explains this difference. Conditions are unfavorable for early prognosis, operative intervention, and for drainage in case of infection.

2 Articular wounds without or with only very slight bone lesions are amenable to arthrotomy if they are seen very soon after injury. The ideal arthrotomy includes excision of the trajectory in the soft parts, capsular incision, removal of foreign bodies, curettage of any bone lesions, cleansing, and suture.

3 Intracapsular comminutive fractures received within the first few hours can be treated by a resection of the femoral head and neck carried out as economically as possible.

4 Extracapsular comminutive fractures with the fissure radiating to the joint should be treated the same as extra articular fractures, i. e. economic removal of the tissues, careful cleansing of the area, chemical disinfection or tamponade, and secondary suture.

5 Suppurative coxofemoral arthritis complicating intra- or extra articular lesions calls for resection of the femoral head.

6 Postoperative care after resection especially as regards the position and immobilization is important. It is advantageous that patients walk as early as possible with the assistance of orthopedic apparatus.

7 The results are good in primary and late secondary resections; they are much less favorable in early secondary resection during the febrile course.

8 Functional results depend upon the time of resection and the amount of bone removed. In general they are very good for intracapsular resections, less favorable in trans- or subtrochanteric resections.

IV Gunshot wounds of the kidney

1 When the local signs, general symptoms, and radioscopic examination lead to the conclusion that there is an isolated kidney wound without other visceral injury, abstention is preferable in the following cases: (a) when the projectile which has caused the seton or which remains behind is of very small volume; (b) when there is but little hæmaturia showing a tendency to diminish with time; (c) when no large perirenal hæmatoma exists. In other cases it is preferable to operate.

The indications of partial or total nephrectomy are: (a) primary threatening hæmorrhage; (b) secondary repeated hæmorrhages; (c) severe infection. During the operation the preservation or removal of the kidney will be indicated by the condition of the parenchyma. Before a nephrectomy the condition of the other kidney should be ascertained as far as possible.

2 When kidney wounds are associated with wounds of other intra abdominal organs, a lateral or median laparotomy is called for following the trajectory of the projectile. Further operation will depend upon the indications furnished by exploration of the kidney region.

In thoraco abdominal lesions the lung and kidney must be treated separately if possible by the thoraco abdominal route of approach, carefully closing the diaphragm so as to isolate the two areas.

The following additions to these conclusions were requested by Iullerton.

1 In kidney wounds in addition to the local lesion attention should be given to the necrosis produced in the area supplied by the blood vessels in the neighborhood of the hilum and parenchyma.

2 The function of an injured kidney to which conservative treatment has been given tends to become re established provided infection can be prevented or stopped.

V Gunshot wounds of the hands

1 The treatment of wounds of the hand follows the general laws of the treatment of war wounds. Conservative methods should be followed as far as possible.

2 Immediate operations should be economic, permitting union by first intention with surgical restoration of the tendons and nerves.

3 A limited amount of bone resection may be practiced in order to obtain a supple and well situated scar. Good cicatrization and mobility of the tendons and joints are more important than complete preservation.

During cicatrization it is necessary to immobilize the injured area in good position, but there should be immediate passive or active movement of all the healthy parts, and mobilization of the injured area should be begun as early as possible.

4 After cicatrization further attention should be paid to mobilization.

5 Bone or joint injuries of the fingers should be treated in the same way as similar injuries in the large segments of the limbs, i. e. by surgical clearance and primary or early secondary suture. For the thumb an articular resection is always to be preferred to amputation.

6 When a finger shows complete rigidity without possible mobilization it should be amputated. Resection of the head of the corresponding metacarpal is indicated especially after disarticulation of the index and little finger.

In metacarpal fractures total surgical clearance is necessary and should preferably be done by the dorsal route.

8 In carpometacarpal lesions resection will generally be limited to the bones injured.

9 Section or loss of substance of the tendons should be repaired by the usual techniques, varying according to the site and extent of the lesions. New adhesions after tendon reconstitution offer the

The results obtained in these small series of animals would not in themselves be accepted as conclusive evidence but are of interest principally as parallel to these histological studies. It is conceivable that the marked stimulation may be taking place in the lymphoid organs through the production of these cells being the main cause of the problem. The question itself offers an interesting problem of just how the stimulation of the number of cells in the circulation. It is well known that individuals with normal cells react differently to the number of cells through the circulation in response to infectious diseases with marked stimulation taking place in the lymphoid tissue of the gland and suggesting a parallel of the animal perhaps could be expected to stimulate the endocrine glands through the stimulation of the lymphatic system.

This study consists of blood count on nine rabbits after an exposure of X rays of a seven eighth inch spark gap milliamperage at distance from the target 8 inches and time of exposure 20 minutes.

In seven of the nine animals there resulted an increase of the circulating lymphocytes. In five of these the increase was marked and in two others definite but not striking.

Of the two animals which showed no stimulation one showed marked fluctuation of counts both before and after X rays and the other little or no change.

The highest penetrating dose (6 inch spark gap milliamperage 5 distance from the target 10 inches time 26 minutes and 57 seconds) given to two animals produced no appreciable stimulation.

GEORGE E. B. I.

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9 Section or loss of substance of the tendons should be repaired by the usual techniques, varying according to the site and extent of the lesions. New adhesions after tendon reconstitution offer the

greatest obstacle to mobility. Immediate and continuous mobilization is a good method of avoiding them.

Vitellius

Even in rare cases arteriovenous aneurysms do not disappear spontaneously.

They must be surgically treated because of the possibility of later complications, especially in the case of the left limb.

3. Operation is indicated when there are urgent indications furnished by the rapid increase in size or by the aggravation of functional disturbances. Should be deferred until the second month.

4. The ideal operation consists in separation of the two vessels and lateral suture of the vascular orifices.

5. When the vascular orifice comprises more than half the circumference of the vessel and the alteration of the vascular wall does not exceed 3 cm, resection and end-to-end suture is the method of choice.

6. When conservative treatment is not possible, excision of the two anastomosed vascular segments is the best means of treatment.

When the preceding operations cannot be done, double ligature should be practiced.

W. A. B. EN. 11

GYNECOLOGY

UTERUS

Schwarz O H The Pathology of Chronic Metritis and Chronic Subinvolution *Am J Obst N Y* 1919 LVIII 63

In general the author's views coincide with those of Shaw. The pathological classification of Shaw namely chronic subinvolution, chronic metritis and hypertrophy is an ideal one. A large percentage over 85 per cent may be placed in one or the other of the above groups. In a small percentage however there is a distinct overlapping which concerns chiefly the groups of chronic metritis and chronic subinvolution. In the author's series 1 per cent of the cases were classified as a combination of these two conditions.

Chronic subinvolution alone is by far the most frequent cause of enlarged uterus causing hæmorrhage pain or leucorrhœa.

Thickness of the uterine wall is due in order of importance to an increase of the elastic tissue, œdema and liquefaction of the connective tissue and hypertrophy or enlargement of the individual cells.

Chronic metritis is a true inflammatory condition does exist it is frequently responsible for the symptoms in the enlarged uterus. Locally it is never a primary disease it is secondary to chronic endometritis, chronic salpingitis or chronic inflammation within the pelvis.

Chronic subinvolution and chronic metritis may co exist in the same uterus.

Hypertrophy of the uterus has a pathological basis of its own it may occur in the multiparous as well as in the nulliparous uterus.

Chronic pelvic inflammation is seen occasionally only in connection with chronic subinvolution and therefore other factors must play a greater role in the production of this condition. In the 38 cases of the author's series there were only 6 that showed inflamed appendages. Only 1 had chronic endometritis.

The thickness of the wall in the majority of cases of chronic metritis and chronic subinvolution is due partially to the increase of the musculature.

The term chronic metritis used clinically should be abolished. The term chronic subinvolution might be substituted in cases of multiparous uterus which are definitely enlarged and cause symptoms without evidence of pelvic inflammation. This would probably include over 80 per cent of uterus which pathologically show signs of chronic subinvolution. The term chronic metritis might be applied to those cases in which there is evidence of pelvic inflammation in connection with a more or less immovable uterus. This would in all probability embrace a greater portion of cases of true chronic

metritis as well as those in which there is a distinct overlapping of both conditions.

EDWARD L CORNELL

Carlsw C M Sacropubic Hernia Prolapsus Uteri *J Lancet* 1919 LXXX 27

The author calls attention to the fact that prolapsus uteri is an erroneous term and prefers to call the condition sacropubic hernia. He then reviews the anatomy of the pelvic viscera calling especial attention to the importance of the pelvic fascia and its relation to sacropubic hernia. The normal position of the uterus and the structures that support it are discussed at length also the injuries to those structures causing prolapse and the clinical features of sacropubic hernia are discussed. There is nothing new regarding the anatomy, pathology and etiology of prolapsus uteri.

In the treatment there are still signs of more and more efficient management of prolapse. The author states that operation is the procedure of choice but in a limited number of cases the pessary treatment will of necessity become the only treatment.

There are innumerable operations for the cure of prolapsus uteri but the author describes only two which in his hands have given the best results.

1. Operation for minor or first degree cases usually in women during the child bearing period. This consists in thorough repair of the pelvic floor with repair or amputation of the cervix and an intra abdominal shortening of the round ligament after the method of the Simpson Alexander Adams operation. The round ligaments are by this method brought out near the region of the internal abdominal ring and firmly anchored to the aponeurosis of the external oblique muscle.

Operation for prolapse of the second and third degrees. For the correction of these conditions the author prefers the extraperitoneal fixation of the uterus by a modification of Kocher's evohysteropexy. This anchors the uterus after either removing both adnexa or ligatures and cutting and burying the stumps into the broad ligaments low down near the cervix into the abdominal wall. Since it is thus fastened to the peritoneum muscle and fascia the uterus cannot slide down again.

If the uterus is very large the body or a portion of it may be amputated and the remaining stump treated as described above. In these cases hæmorrhage is troublesome and a small drain had best be placed in the wound to be removed at the first dressing.

Perineorrhaphy and repair or amputation of the cervix should of course precede the abdominal operation. If the patient's condition is questionable a two stage operation had better be done.

HARVEY B MATTHEW

performed for cases of retroversion of the uterus the majority of the cases were complicated by the presence of adhesions holding the fundus of the uterus in Douglas pouch. A variety of operations for suspending the uterus were tried of which the Baldy Webster on the whole gave the most satisfaction.

There were 7 cases of myomectomy with no deaths. There were 199 hysterectomies for fibroids with a mortality of 15 per cent. the youngest patient was twenty two the oldest seventy years of age. In 60 per cent of the cases operated upon one or both fallopian tubes were adherent. In the author's experience fibroids favor the formation of pyosalpinx no case of fibroids complicated by pregnancy was operated upon.

Eight supravaginal hysterectomies were performed for fibrosis of the uterus. In each case the bleeding had been prolonged and severe and curettage which had been previously performed had only increased the bleeding. All the patients were exceedingly anæmic. A microscopical examination of the uterus showed the muscular tissue to have been replaced by an excessive growth of the fibrous tissue and the outer and middle coats of the uterus to be thickened.

The author performed the Wertheim hysterectomy operation for cancer in 4 cases with a mortality of 25 per cent. the youngest patient was twenty six and the oldest fifty eight years. The author believes in so far as Burmese women are concerned that the incident of this form of cancer follows the same rules both in frequency and other characteristics as in females of other races. Twelve

cases were operated upon for sarcoma of the uterus the youngest patient was twenty two and the oldest fifty.

There were 13 cases of cesarean section with 2 deaths. All the mothers recovered and children survived.

As a patient the Burmese woman behaves excellently she is of a cheerful disposition and her habits are cleanly. Oral sepsis is very rare and alcoholic drinking practically unknown.

With regards to gynecological functions menstruation usually commences about the age of fourteen to fifteen years the period lasts four to five days and is in no way excessive. Nearly every Burmese woman marries at the age of eighteen to twenty years and large families are common. The menopause usually occurs about the age of forty seven to fifty years and is unaccompanied as a rule with nervous disturbances.

As regards diseases peculiar to their sex it appears to the author that Burmese women show no marked liability to nor immunity from disease and that their ailments are very similar to those of women in more temperate climates under more civilized conditions of life.

The mortality percentage is due to the debilitated condition of many of the patients and the advanced stage of their disease further aggravated by the necessity of operating without delay. Any pre operative rest in bed is as a rule unobtainable for on admission into the hospital the Burmese woman is very timid quite ignorant of hospital routine and therefore suspicious.

E. C. ROBESON

rhages during the latter months of the pregnancy which necessitates a rapid termination of labor.

Outside of such cases where the condition is fairly grave, other measures which the author mentions have been found effective. In his practice he has found that tamponing the vagina with aseptic gauze following the rupture of the membranes is distinctly beneficial. This does not inhibit hemorrhage since the gauze does not directly reach the bleeding zone, yet it has an indirect effect in diminishing hemorrhage as Villanueva has been able to prove in more than one case. It seems to influence the contracting power of the uterus and contractions are recommenced with greater frequency and intensity. Dilatation is rapid and progresses until the head descends and acts by its compression upon the bleeding zone, pushing the projecting part of the placenta out of its path. If dilatation and descent of the head proceed too slowly, injections of pituitrin can be resorted to.

Such measures suffice in medium cases and make unnecessary maneuvers which predispose to infection in a patient already weakened by hemorrhages.

W. A. BRENNAN

Bonney V. Abdominal Evacuation of the Pregnant Uterus Before Viability. *Lancet* Lond 1918 II 518

The appreciation of the safety of abdominal hysterotomy in the uninfected uterus has led Bonney to classify under three heading circumstances under which it is preferable before viability to empty the pregnant uterus through the abdomen.

1. When in addition to evacuation sterilization of the patient is required. In certain cases of pregnancy in tubercular women the uterus should be emptied at once and further pregnancy prevented by ligating or removing the tubes. Also in valvular disease of the heart with unstable compensation pregnancy should be averted as soon after its initiation as feasible and further conception rendered impossible.

Rarer instances in which it is preferable to combine evacuation of the uterus with sterilization are those cases in which pregnancy is habitually followed by some dangerous disturbance, as nephritis, diabetes, hemolytic anemia, or insanity. Finally this operation is indicated in cases of physical deformity incompatible with continued pregnancy, as extreme kyphosis.

The older method of procedure in dealing with this class of cases was to evacuate the uterus through the cervix and then to open the abdomen and tie off or remove the tubes. Bonney has abandoned this practice for years. Instead, having opened the abdomen, he incises the uterus through its anterior wall, shells out the pregnancy, closes the uterine wound with three mattress sutures and a superficial continuous suture, and then ligates or cuts off the outer halves of the tubes. By this means the proceeding is shortened, simplified, and rendered absolutely aseptic.

When the pregnancy has advanced to the fourth month or over and its termination is urgent. The evacuation through the cervix in pregnancy of four months requires for delivery of the head extensive incision of the cervix, and in pregnancy further advanced an incision of the lower pole of the uterus from the external os upward to the peritoneal reflection — the so-called vaginal cesarean section.

This is a formidable operation for the expert alone and is attended with a greater danger of infection. For these reasons he has long employed the abdominal route for the removal of a pregnancy of four, five or six months standing in cases of gastro-hepatic or cerebrorenal toxemia or such gravely menacing complications of pregnancy.

3. In certain cases of pregnancy complicated by fibroids. Occasionally one sees cases of early pregnancy complicated by fibroids in which the tumor or tumors demand surgical intervention. It should be a cardinal principle in the surgery of fibroids complicated by pregnancy to avoid the removal of the uterus when possible. Pedunculated fibroids can be removed without the danger of interruption of pregnancy. But in deeply imbedded tumors abortion is almost certain to follow myomectomy and more over the suture of the cavity left in the uterine wall is not likely to be satisfactory if the organ be distended and vascular from the pregnancy within it. If abortion does follow intraperitoneal bleeding from the suture line may result.

Formerly in these cases it was the custom to remove the pregnant uterus, but Bonney advocates the treatment of the pregnancy like another fibroid, enucleating it also, leaving the patient with her still competent organ.

Of all tissues the uterine muscles have the most perfect healing powers, and the scars from previous cesarean sections and myomectomies are not discernible when the abdomen is opened to perform the operation for a second time.

The technique is that of the cesarean section. He emphasizes that the incision should be made through the anterior wall for two important reasons: first, so that the uterine wound may present toward the bladder and thus avoid adhesions of the intestine; and secondly, so that if persistent oozing continues from the needle punctures the uterus can be fixed to the anterior abdominal wall by sutures along the line of the uterine incision. The effused blood from these points attracts coils of intestine to adhere to the uterus.

J. DE J. PEMBERTON

Duncan J. W. and Harding V. J. A Report on the Effect of High Carbohydrate Feeding on the Nausea and Vomiting of Pregnancy. *Canad Med Ass J* 1918 VIII 1057

In this paper the authors discuss the various theories as to the etiology of this condition, outline a method of classifying the different types of this affection, give a general outline for their treatment, and summarize results in the management of a series of 50 cases under this method of treatment.

was given under each breast. This hypodermoclysis was never required a second time in any case but was followed by rectal then by oral administration. As soon as the patient showed any inclination for food small amounts of carbohydrates were given at frequent intervals. The subsequent treatment was the same as for the mild cases. All 12 patients were carried to full term and delivered of healthy babies one of twins.

In the mild and moderate cases the results from treatment along these lines were most gratifying. Complete and continued relief occurred in 28 cases within forty eight hours. Complete relief from vomiting but with occasional returns of nausea occurred in 12 cases. Many of the relapses could be traced to indiscretions in diet. Two cases showed a continual nausea with hyperacidity throughout the entire pregnancy but continued to full term with no graver symptoms developing. Of the moderate cases 14 gave evidence of immediate and continued relief within one week of the installation of the treatment. Three cases however were more stubborn and showed some tendency to revert to the pernicious type. With more complete isolation in hospital wards success was very speedily obtained. In these mild and moderate groups it may be well to state that in 46 cases pregnancy had not advanced past the first ninety days before treatment was commenced the remaining 13 cases were between the third and sixth months. In the pernicious group of 11 cases (7 primiparæ) the severe vomiting developed within the first one hundred and twenty days of pregnancy and only three showed any recurrence in the later periods. It is interesting to note that among the multiparæ 3 had had previous pregnancies terminated for toxic vomiting and of them on two occasions whereas all proceeded under this treatment to full term. C D HOLMES

Black H S Pyelitis Complicating Pregnancy
South M J 1919 11 39

Black calls attention to pyelitis as a frequent but not always recognized complication of pregnancy and the puerperium. It is more prevalent during the former than the latter period. Various organisms may cause pyelitis the most common being the colon (from 60 to 80 per cent of the cases) typhoid bacilli, staphylococci and streptococci.

The organisms may reach the kidney either through the circulatory system, the lymphatics or direct ascension from the bladder along the lumen of the ureter. The right kidney is more frequently affected due to greater pressure of the pregnant uterus on the right side. The infection may cause only a bacilluria or it may cause a cystitis. Acute pyelitis may develop accompanied by localized pain. Pus seldom comes from both kidneys at once.

A correct diagnosis can be made best with the aid of the microscope and bacteriological study of a catheterized specimen of urine.

As to treatment good circulation free elimination by the bowels with proper diet and enormous

amounts of water by the mouth to dilute the urine and also wash out the kidneys is indicated. As an acidifier of urine potassium bitartrate is probably the best agent for its acid as well as diuretic effect. Hexamethylamine is the best germicide but must not be given over too long a time on account of causing kidney and bladder irritation.

Irrigation of the kidney pelvis is beneficial if carefully done. Autogenous vaccines are useful in some cases. If all other treatment fails operative procedure is necessary. In cases of multiple abscesses of one kidney with the other normal, nephrectomy is indicated. L R GOLDSMITH

Davis E P Infection by the Bacillus Coli Communis Complicating Pregnancy Labor and the Puerperal State
South M J 1918 11 193

In this paper the author discusses three types of infection by the colon bacillus as complications of pregnancy labor and the puerperal state. The first and most frequent of these types has to do with infection of one or the other or both of the kidneys by the colon bacillus. During the latter half of pregnancy the pressure upon the bowel and the right ureter are sufficient to cause infection by the passage of bacteria to the urinary tract. Infection of the kidneys may be of an ascending type originally at the external urethral orifice and finally it may be of a blood borne origin. While the etiology of this condition is somewhat obscure constipation and any condition which brings about extraordinary pressure upon the abdominal viscera favors the development of this complication.

The signs and symptoms are those of an acute infection. The indefinite lumbar pain may be taken for a lumbago. In the woman with this complication one or both kidneys are tender on deep pressure. The colon bacillus is present in the urine in pure culture. The urine is acid and there may be a leucocytosis as high as twenty or thirty thousand. There is little or no abdominal pain and distention. The disease runs a prolonged and indefinite course. With good resistance on the part of the patient a mild pyelitis may be the only essential lesion but with poor resistance a surgical kidney may develop. One attack cannot be said to safeguard against others.

The diagnosis must often be made between this infection muscular rheumatism and lumbago. Thorough examination of the urine will usually make possible a positive diagnosis. In the puerperal state septic infection must be considered but with a normal lochial discharge and absence of the signs of peritonitis a correct diagnosis is possible. The condition can best be prevented by avoidance of constriction about the abdomen and by the abundant use of good drinking water.

The treatment of the condition consists in keeping the patient in bed and thoroughly cleansing the bowels. The diet should be limited to milk and water. Hexamethylamine may be used. Vaccines are of doubtful value in this condition. Dilute

classes of cases. Twilight sleep is most applicable during the first stage of labor particularly in primiparous women. When the first stage is unusually protracted and painful as it is in some cases of premature rupture of the membranes or in some cases in which repair work has been done on the cervix uteri the author knows of no other means equally capable of preventing excessive pain and of accelerating the dilatation of the cervix uteri.

In cases of delivery through the natural passages in women who on a previous occasion have been delivered by abdominal caesarean section it is of the greatest importance to prevent all straining on the part of the parturient woman and to extract the child just as soon as dilatation is completed so as to keep all strain as far as possible from the uterine scar. Here again twilight sleep is the safe and surest means of aiding dilatation and of preventing straining. Under twilight sleep the patient will strain if the doctor rouses her and asks her to bear down but she will not do it otherwise. Under nitrous oxide-oxygen women usually cannot help bearing down.

Among the case included in the series here reported are two cases of twilight delivery after caesarean section. Both cases were kept under twilight sleep the one for five hours the other for twelve hours and were then delivered by forceps of living children and both made uneventful recoveries. One has been delivered a second time since again by twilight sleep and low forceps with a living child and an uneventful recovery.

Nitrous oxide-oxygen is best suited for multiparous women and for the second stage. Having become familiar with its advantages and absolute safety for mother and child it is used more often and its field extended. It has the advantage that it can be used by the practitioner in any kind of home.

Chloroform is as indispensable to the obstetrician as ever.

Ether is necessary for a limited number of cases only but in the cases one cannot work without it.

Morphine and chloral hydrate are helpful in increasing or accelerating the action of the four principal obstetrical analgesics and anesthetics.

EDWARD L. CORNELL

Skell A. J. Recognition and Management of Labor Injuries. *Am J Obst & G* 919 1912

Many labor injuries remain uncorrected at delivery because they are not discovered at that time. In operative deliveries the chance for contamination is greater but the need for careful examination for injuries is also greater. After some experience with complete after delivery examinations one becomes quite skillful in predicting whether serious injury has occurred in the higher parts of the genital canal. Considerable study was given to the technique of this examination. At present the author proceeds as follows:

In the first place keeping vaginal manipulations to an irreducible minimum is considered part of the

technique of safe postpartum investigation. After delivery of the placenta the patient is put in the lithotomy position the labia carefully cleansed and gas analgesia resumed. The anus is covered with either dental rubber dam or sterile towels held in position by adhesive plaster fastened to the thighs. Fresh gloves are put on and the examination begun by inspection of the cervix. Either a drop light or a good head light is essential to a satisfactory inspection.

After the patient is cleansed retractors are introduced. The author uses a special retractor made wider in proportion to its length than the standard shape. An assistant makes pressure on the fundus bringing the anterior lip of the cervix to the vulva. For grasping the cervix volsella are unsatisfactory therefore cervix holders of the old sponge holder type are used. The rim of the cervix is readily inspected by bringing successive portions into view using two holders in hand over hand fashion for bringing down the concealed posterior lip. Some times before delivery of the placenta one may inspect the entire cervix at a glance the whole cervical rim within about the placenta as it does over a distended Voorhees bag.

For the proper inspection and repair of the mid and upper vaginal injuries pressure by the assistant on the fundus is removed, cervix holders taken off and firm gauze pressure applied to the cervix pushing the entire uterus upward thus smoothing out and distending the relaxed vaginal vault. Two vaginal retractors aid materially in securing good exposure.

Speaking broadly in the last 350 cases the cervix and upper vagina have been examined using the technique described in about 180. In multiparæ with known old lacerations etc cervical inspection and repair is not considered necessary, also intra genital manipulation is avoided in cases where there was good reason to suspect infection was already present.

In this series 31 cervixes needed repair of these in 9 instances for various reasons such as preceding severe hæmorrhage known infection etc suturing was done. Of the 43 cervical cases repaired at delivery 7 were unsuccessful.

There was one infection in the entire series of 180 inspected cases. This patient had been subjected to prolonged intra uterine manipulation both manual and instrumental.

The use of gas has done much to make possible more careful work. The resumption of gas analgesia or of anaesthesia if needed involves very little discomfort to the patient and renders the whole procedure simple. The author wishes to emphasize four points:

1. Limiting or entirely avoiding vaginal examinations during labor is a routine preliminary part of the technique of primary repair of labor injuries.

2. Immediate inspection of the cervix with primary repair of its injuries reduces the risk of subinvolution and of uterine displacements.

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PUERPERIUM AND ITS COMPLICATIONS

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l h u l l h l p h n m n a v i t h w h c h a s y n c o
p l t t t d e a b s e n t i n t h i s c e

W A B R E N N A

GENITO URINARY SURGERY

KIDNEY AND URETER

Buerger L. Renal and Ureteral Infection with the Gonococcus. *J. M. J.* 1918, CIVIL 10

Buerger recounts the case histories, cystoscopic findings and pathological changes in two cases of gonorrhoeal infection of the bladder ureter and kidney. In one instance the alterations were confined to the bladder, in the other they were well developed about one ureteral orifice and confusing in their simulation of tuberculous lesions.

Case one may be summarized as follows: gonorrhoeal infection of the bladder and the lower portion of a kidney with double separated pelvis and ureters, hydronephrosis and gonorrhoeal stricture of the corresponding member of the duplicated ureters.

Cystoscopic examination was unusually interesting both because of the presence of an anomaly in the shape of two ureteral orifices on the right side and also because of most unusual lesion about one of the ureteral orifices, namely that which drained the infected portion of a double kidney with duplicated ureter.

Of the two orifices on the right side the upper or posterior was diseased. At first glance the lesions about the right upper ureter could be mistaken for those associated with renal tuberculosis. The inner lip of this orifice was raised, had a crenated or scalloped edge so that the orifice itself marked the outlet of a sort of a tunnel roofed by the swollen inner lip. Grouped about the right upper orifice were polypoid oedematous protuberances not unlike those seen in renal tuberculosis. The lower right ureter showed none of the lesions present, only that slight hyperemia and oedema common to the general trigonal inflammation.

The ureteral catheter met an obstruction at ten cm. from the bladder orifice in the right ureter; no urine could be obtained over a period of some twenty minutes. From the right lower ureter and from the left ureter a flow of perfectly clear urine was obtained; the renal function as estimated roughly by the excretion of indigocarmine showing good excretion from both the right lower ureter and the left ureter.

In brief the specimens from the right lower ureter (from the upper portion of the right kidney) and from the left kidney contained no gonococci; no pus cells, the urine being otherwise negative. The bladder urine contained numerous gonococci. No urine was obtained from the right upper ureter.

The finding of pure culture of gonococci in the bladder specimen on two occasions, the absence of tubercle bacilli after careful search in two catheterized specimens, the presence of considerable pus in the bladder which was doubtless derived to a considerable extent from the infected right lower pelvis

seemed to justify the assumption that the case was one of gonorrhoeal infection of the bladder of gonorrhoeal stricture of one of the duplicated ureters leading to the right kidney and a gonorrhoeal pyohydronephrosis of the lower portion of a double kidney with the separated pelvis.

A nephrectomy was performed and the operative findings showed a kidney with separated pelvis and ureters divided into an upper normal portion free from infection provided with a practically normal ureter and a lower hydronephrotic and infected portion with dilated pelvis and thickened ureter with peculiar lesions simulating those of the strawberry gall bladder lesions produced by the effects of inflammation and ureteral stenosis due undoubtedly to the gonococcus and altogether different from anything that is usually encountered as the result of the action of the usual pyogenic organisms including the colon bacillus. The small size of the anomalous lower dilated and infected portion of the kidney, the situation and conformation of the pelvis would suggest that exceptional anatomical conditions obtained in this part of the kidney before the superadded lesions of inflammatory ureteral stricture had supervened to bring about the finished pathological product.

The patient made an uneventful recovery after nephrectomy, although a sinus remained for some three weeks before the wound was completely closed.

Regarding the ureteral lesions Buerger thinks that such extensive proliferative and oedematous changes about one ureteral orifice when they are the expression of a tuberculous process are most frequently associated with other bladder lesions suggestive of this process which were absent in this case. When tubercle bacilli are absent the most reliable method of diagnosis when permitted by the patient would be the removal of portions of the oedematous tissue by means of a punch forceps through the author's operating cystoscope and the histological examination of such tissue for miliary tubercles.

This case teaches first that gonorrhoeal lesions in the bladder and about a ureteral orifice may simulate those of tuberculosis; second that extensive stricture of the ureter may ensue as in the urethra; third that marked thickening of the ureter with periureteral inflammation can exist as the result of gonorrhoeal inflammation without the presence of calculus; fourth that such ureteral contraction may result in attenuation of the renal parenchyma and its destruction; fifth that the lesions of such an infected hydronephrotic kidney and its pelvis may be quite differing essentially from those produced by other pyogenic or

g n i m s and s t h t h t t h i c a s e i s u n u s u a l n
t h a t n l y n e u t e r p e l a n d i t s c o r r e s p o n d
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u r i n a p a s s e d c l e a n l f r o m t h i s d a t e o n t h e
p a t i e n t m a d e a n u n e n t f u l c u r e y

H e r e t h e c o e t e r e v a s a v e r y d e f i n e t e c a s e i n
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i n k l t n a s m a l e t h t t h e i n f l a m m a t o r y
p r o c e s s d e d b y t h e g o n o c c u s i n t h e u r e t e r h a s
a n t i n a l y p l u e a s t r u c t u r e o f t h e p a s a g e
j u n c t i o n t h e u t h r a n l t h t r e t e n t i o n o f u r n e
l a t t u r c a n b e d e m o n s t r a t e d t o o c c u r

B n s J E a n d S w r t E O A b o r p t i o n f o m
t h R n l P l i n H y d o n e p h r o s i s D u e t o
P r m n t n d C o m p l t O c c l u s i o n o f t h e
U r e t J l l 9 9 4 4 5

D d n a r e c e n t p u b l i c a t i o n o A s c e d n
L y I n f e c t i o n s t a t e s E v i d e n c e i s p r e s e n t e d
t h a t a s c e n d i n g b a c i l l u s c o l i i n f e c t i o n o f
t h e u p p e r a r y t r a c t f r o m t h e b l a d d e r t a v e l m o s t
f e q u e n t l y b y t h e l u m e n o f t h e u r e t e r

K e y n p e r m e n t a l s t u d i e s o f t h e i n j u r y c a u s e d
b y p y e l o g a p h y f u n d t h a t a f t e r h e h a d i n j e c t e d
l i g l i n t o t h e p e l v i s o f o n e k i d n e y i t w a s f o u n d
i n t h e t u b u l s b l o d v e s s e l s a n d g l o m e r u l i o f t h e
j u t d k d n e y a s w e l l a s i n t h e b l o o d v e s s e l s a n d
g l m u l o f t h e o p p o s i t e k i d n e y H e a s s u m e d t h a t
t h e p a t h o f a b s o r p t i o n v a s a s w a y o f t h e b l o o d
v e s s e l s a n d l y m p h a t i c s o f t h e i n j e c t e d k i d n e y

E i s n d r a t h m a d e t h e s a m e o b s e r v a t i o n s w i t h c o l
l a r g l d e m o n s t r a t i n g t h a t c o l l a g e n e n t e r e d t h e
b l o d s t e a m b y r u p t u r e o f t h e t u b u l e s i n t o t h e
b l d v e s s e l s

M i t n r e c n t v o r k o n a b s o r p t i o n f r o m t h
l l d d r f a l d d t o d e m o n s t r a t e a n y a b s o r p t i o n f r o m
t h b l a d d e r h a s s h e d i t h t a n s i t o n a l e p t h e
l i o m a f t h e s a m e c h a r a c t e r a s t h a t l n g t h e p e l v i s
o f t h e k i d n e y

I n t h e f o l l o w i n g e x p e r i m e n t s i t a s a t t e m p t e d t o
d e m o n s t r a t e n o t o n l y t h e p a t h b u t a l s o t h e r a t e o f
a b s o r p t i o n b y t h e i n t r o d u c t i o n o f a s o l u b l e d y e
a s p h e n o l s u l f o n e p h t h a l e i n t h e p e l v i s o f t h e
b s t e d k i d n e y a n d e s t i m t i n g i t s h a r l y s e c e
t o n b y t h e u b s t e d k i d n e y

U n d e r e t h e r a n a e s t h e s a t h e k i d n e y a n d u e t e r
e c o p o s e d t h r o u g h a l u m b a r n e i s o n c a b e i n
t k e n i n f r e e n g t h e l a t t e r f m s u o u d i g t s s u e s
t o a v o i d n j u r y t o t h e p e r u r e t h r a l v e s s e l s T h e
u r e t e r i s n o w s e c r e l y l g a t e d 5 c m b e l o w t h e

ureteropelvic junction the needle introduced into the ureteral lumen and the solution to be introduced into the pelvis allowed to run in by gravity. Over distention of the pelvis was prevented by never elevating the burette containing the solution beyond six inches above the body of the animal. In four instances in which the solution was introduced by means of a syringe the results were so variable that it seems probable that some of the fluid was forced into the renal parenchyma. The amount of solution introduced sufficient to distend the renal pelvis by the method just outlined was of necessity subject to considerable variation because of the presence of variable amounts of urine in the pelvis dependent upon the rate of renal secretion. For this reason the concentration of the solutions introduced varied considerably. Following distention of the pelvis to its capacity the ligation previously placed proximal to the needle was tied and the needle was withdrawn. The ureter was now replaced in its normal position and the wound closed with silk ligatures.

This procedure was carried out on 18 animals followed by a second operation done in five instances.

Phenolsulphonephthalein is not the only soluble dye absorbed from the renal pelvis and secreted by the other kidney. Studies of the absorption of indigo carmine were made on two animals in one of which the syringe was used and in the other in stance the gravity method of injection.

In the first experiment 1 ccm of 4 per cent aqueous suspension of indigo carmine was injected into the pelvis and the animal killed in one and one half hours the dye having appeared in the urine coming from the other kidney. Sections were made and the dye found in both kidneys but in insufficient amounts to permit its path to be traced. In the second experiment 3 ccm of 4 per cent aqueous suspension of indigo carmine were injected by the gravity method and the dog killed in three hours. The kidney with the ligated ureter weighed 40 grams and the opposite one 9 grams this increase in weight being due to retained urine and congestion. On section the dye was found in small amounts in both kidneys.

Failing to trace the path of absorption by the use of indigo carmine india ink was used in a series of nine experiments the injection being made by gravity in seven and with the syringe in two instances. In all of these animals the ureter was completely ligated before the ink was injected. The seven animals were killed at intervals of from thirty minutes to twenty four hours after the injection and sections were made from both kidneys, liver, spleen, lungs and pancreas. These specimens were embedded in celluloid and the section stained with eosin alone so as to avoid confusing any granules from the stain with those of india ink. The amount of ink used in these experiments varied from 0.25 to 1 ccm and in no instance was the pelvis forcibly distended with the solution. In every case where the ink was absorbed in amounts

sufficient to permit the tracing of its course through the absorbing kidney into the circulation and through the normal kidney its pressure was demonstrated in the other organs with an extensive capillary circulation namely the liver, lungs and spleen.

The particles of ink could be seen distinctly in the collecting tubules, the distal convoluted tubules, the ascending and descending limbs of the loop of the ileum, the proximal convoluted tubules, the space between the parietal and visceral layers of Bowman's capsule and between the tufts of the capillaries themselves. Particles of ink could be also seen in the capillaries of the glomeruli and in the other vessels of the kidney. These facts seem to demonstrate that the particles of ink ascend the tubule of the absorbing kidney, enter the circulation through the spaces between the endothelial cells of the capillaries of the glomeruli, are carried by the blood stream to the other organs of the body and are secreted by the other kidney both by the glomeruli and the epithelial cells of the convoluted tubules. It is reasonable to suppose that if particles of ink can travel in this manner bacteria and other foreign substances can do likewise.

The following conclusions are drawn:

1. Absorption takes place from the renal pelvis after complete ligation of the ureter.
2. Absorption also takes place from the renal pelvis in long standing hydronephroses.
3. The path of absorption as demonstrated is by way of the tubules and through the capillaries of the glomeruli.
4. The rate of absorption is prolonged especially in cases of hydronephrosis.
5. The rate of absorption during the first twenty four hours is frequently the same in long standing hydronephroses as in the acutely distended pelvis.

THEO. DROZDOWITZ

Deluca, F. A. A Case of Fœtal Polycystic Kidney and Its Probable Pathogenesis. (Sobre un caso de rinon poliquistico fetal y su probable patogenia). *Semana Médica* Buenos Aires 1918 xxv 410.

The author considers the theories put forward to explain polycystic kidney viz the inflammatory, the neoplastic and that of embryonal malformation. He thinks that syphilis is an important factor in determining the condition. From a study of the embryology of the kidney he finds that the true renal tissue (canaliculi contorti) originates from the nephrogenic tract while the eliminating ducts are derived from the wolffian duct.

The process to which polycystic kidney is due is a result of maternal syphilis. It is a simple hyperplasia provoked by the irritation of the toxic syphilitic agent which has selected the kidney, causing cellular multiplication of the investing epithelium of the urine bearing and eliminating ducts. These become distended to an exaggerated degree within their mesenchymatous covering and the process progresses until equilibrium is established between the

they are taken into the blood from the intestinal tract unchanged in their passage through the intestinal mucosa.

Gerster has reported the case of a child dying shortly after birth in whom autopsy revealed the insertion of the left ureter into a blindly opening rectum. The left kidney and ureter showed dilatation. Oberteuffer and Revolet have reported a case of an abnormal fetus with both ureters opening into the rectum.

In 1713 Richardson reported an interesting case in which a boy lived till he was seventeen years of age and never made water and yet was very healthy. He had diarrhoea constantly. The obstruction must have been in the kidneys for he never had any inclination to make water. He died of a fever.

The first attempt to divert the urinary secretion into the bowel was made by Simon in 1851. This operation was performed on a thirteen year old boy for exstrophy of the bladder. The patient died twelve months after operation. Both ureters were obstructed by calculi and the ureters and kidneys were seriously diseased.

In 1802 Chaput united the right ureter to the rectum in a case of ureterovaginal fistula. This patient was reported living and her health very satisfactory eight years after operation. Chabot in 1866 did a bilateral ureterocolic anastomosis in which he removed the ureters for carcinoma of the uterus. This patient was reported living and well one year after operation.

Fowler in 1866 operated upon a boy of six for exstrophy of the bladder. This patient lived to adult life and was then lost sight of.

Keen in 1855 operated upon a woman thirty four years of age for vesicovagino-rectal fistula. He closed completely the vulval opening so that the patient defecated menstruated and micturated entirely per rectum. This patient was in perfect health twenty two years after the operation.

Mayo in an article on Exstrophy of the Bladder published in December 1911 states that since 1896 thirty seven patients have been seen with exstrophy of the bladder. Sixteen of these were operated upon with the idea of diverting the urinary stream into the colon. Of these sixteen cases three were operated upon by the Midy-Moynihan method with two deaths from uræmia. The remaining thirteen cases were operated upon by the trans-plantation method with one operative death. Mayo states that the children operated upon were all able to go to school and that the older ones are all working.

The following case throws considerable light upon the subject of the remote effect on the body of the prolonged absorption of urine from the intestine. For twenty years urine has been diverted from the left kidney into the bowel. It is an example of unilateral anastomosis between the ureter and colon and of especial interest in that this anastomosis was produced by trauma and not made intentionally.

A married woman aged forty seven was first seen for urological examination in August 1917. She complained of very frequent urination pain at the mouth of the bladder blindness in the left eye very marked impairment of vision in the right eye severe headaches and general weakness. At the age of twenty seven a tumor of the right ovary was removed and an infected cyst like tumor was found in the left side adherent to the intestines and bladder. Two months after the operation urine and feces were discharged from the abdominal wound and three weeks later urine was passed per rectum. Seven months after the first operation she was again operated upon and the abdominal wound closed but urine continued to be passed per rectum. Recently following a phthalein test the dye was found in the stool.

In May 1915 she was operated upon for appendicitis. In June and August 1916 severe attacks of left renal colic occurred.

An urological examination on August 24 1917 showed the bladder capacity 60 ccm. The trigone showed bulbous edema. The bladder showed fine trabeculation and moderate congestion. A centrifuged specimen showed a few pus cells a few hyaline casts and many epithelial cells. On September 5 cystoscopy and ureteral catheterization was done. The right ureter was catheterized easily but upon attempting to introduce a catheter into the left ureter it could be passed for only about 2 cm. After an intravenous injection of 6 mgm. of phenol sulphophthalein 6 ccm. or 30 per cent of the dye appeared in the urine from the right ureteral catheter in three minutes. Urine collected from this catheter for the second period of fifteen minutes was 1/4 ccm. or 1/4 per cent of the dye. During this period of thirty three minutes no urine came from the left ureteral catheter.

The patient stated that after the phenol sulphophthalein test the red dye was seen in the stools. It seemed undoubtedly proven that there was anastomosis between the left ureter and the colon and that the right kidney was free of infection and hypertrophied. A ray examination of both kidneys was negative. Left nephrectomy was done on September 13. The pelvis was moderately dilated and the ureter measured 1 cm. in diameter. The ureter was followed down to the brim of the pelvis so that no anastomosis with the bowel occurred to this point. The patient reacted splendidly and was discharged on the twenty fourth day.

The patient was last seen September 10 1918 almost one year after operation. Her health had steadily improved.

The work of Bird Scott and Spencer has shown rather conclusively that the entire urinary output cannot be diverted into the upper intestinal tract without producing fatal results. Mayo found that in doing ureteral implantations it was preferable to implant first one ureter and subsequently the other because mental apathy came on after the diversion of the urinary stream into the lower bowel.

In conclusion the work of Coffey and Mayo has demonstrated that the ureter can be implanted into the body from the technical standpoint and that the development of the stream into the bladder is not a complicated thing rather long term of life. It could seem however that in the products can be based on the health of the implantation be made to do in the future and that the prolonged observation of these products may eventually produce a picture not unlike that of nephritis.

BLADDER URETHRA AND PENIS

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o f t h b l a d

An a s e p t i c m u s l l c a t d n the p e r a l a t m s
p h e n v b l e n t o l e r t e d b t a n n t r a n e a l
f o r e g b o d y o r n e o t c t t h t h u r e t
h u l d u n q u t i n l y b e m o v e d H a e m a t u r a
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result of a simple contusion of the kidney by the missile or its penetration or transfixion of the gland. The distinctly higher mortality of cases with the missile retained in the kidney parenchyma is due to haematuria, a secondary haemorrhage and infection.

Operation for haematuria is only indicated when the loss of blood is continuous and in considerable quantity. Partial nephrectomy can be done in those rare cases where the renal lesion is limited in extent.

When the missile lodged in the kidney is very small it is left to leave it alone. On the other hand large missiles which cannot be easily removed without destruction of the renal parenchyma should be removed.

In the last days (from five to eighteen months) may require operation for continued pain in the back, pain in the majorities of cases, but not in cases of local treatment. H. A. KRAUS

D n Z C and R i o J Grafts of th S phenous
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B g t a 9 8 6

The authors report 2 cases of repair of urethral defects by transplants of sphenous vein. In the first case the patient showed a urethral fistula in the perineal region and a opening in the left anal border. They had followed by following urinary bladder after an old gonorrheal infection. On doing a urethral urethrotomy and fistular resection it was found that in the perineal region there was a defect corresponding to the urethra completely exposed, and that the patient was satisfied by the posterior end of the urethra. The urethra was completely destroyed for about 1 cm. The authors decided to make an anastomosis graft following the method of Legueu of 1912 which resulted in a satisfactory result.

A piece of saphenous vein about 8 cm long was resected from the region of Scarp's triangle and kept in a serum. The perineal bed of the graft was prepared and the graft fitted in accordance with Legueu's technique except that in Legueu's case a perineal tunnel was formed with a trocar while the authors excised the tissues of the perineal canal and anastomosed them over the piece of inserted vein. The postoperative course was normal. The perineal tissues over the graft cicatrized in eight days and a bougie was passed on the tenth day. After some months the patient passed the greater part of the urine through the meatus but a much diminished portion in fistula still persisted.

The second case was very complicated and a previous perineal prostaticomy was necessary. The sphenous graft was inserted as in the first case part of the perineal urethra having been converted into a fistulous opening. Successive attempts after cicatrization of the wound failed to form a urethra. The anterior part of the bougie always being stopped at the anterior part of the graft vein and urethra. The authors therefore decided to perform an internal urethrotomy, the first that has been

practiced with a piece of saphenous vein converted into an urethra. The result was completely satisfactory. The patient who previously passed all his urine through the perineal fistula now passes a copious jet through the meatus and shows no signs of a perineal fistula. The only defect is a slight incontinence of urine which is in no way due to the functioning of the saphenous vein inserted but is due to previous prostatic trouble and the removal of the prostatic sphincter. In this case the author believes that the final functioning of the grafted vein is even better than in Legueu's case. He thinks that in less complicated cases and with a perfected technique such transplantations will be practiced to a larger extent in modern surgery.

W A BRENNAN

Adlercreutz C A Case of Complete Hypospadias Free Transplant of Vena Saphena Magna as an Urethral Substitute (Ein Fall von vollständiger Hypospadie die Vena saphena magna als Ersatz der Harnröhre frei transplantiert) *Vord med 1rk Stockholm* 9 8 li 1 surgi 163

The patient in this case had been educated as a girl but at the age of thirteen years was declared a male. Before coming to the author he had undergone a previous operation to free the penis. The author undertook to completely free the organ and lengthen the urethra so that it should discharge through the glans.

The method adopted by the author was to implant a piece of the internal saphenous vein taken from the patient as a substitute for the urethra. The peripheral end of the vein was sutured to the freshened urethral end and the central end being pulled through an opening made in the glans. To draw off the urine a suprapubic bladder fistula was created before effecting the transplantation.

After healing of the wounds it was found that a probe could not be passed through the newly formed urethra beyond the point of union between transplant and old urethra. A further operation for removal of this stricture was necessary. It was then possible to pass a sound to the bladder. Numbers 14 and 15 Charrière sounds were at first used and the patient was able to pass urine through the new urethra. The suprapubic fistula was then allowed to heal. New fistulae however appeared as well as the evidence of cystitis. The latter was due partly to the urethral calculi formed by the presence of a small piece of catheter left behind during the previous manipulations. The stones had to be removed. Finally a No 4 Charrière could be used and the patient could pass a normal stream of urine. The purpose of the operation had been effected but only after a long and most painful period for the patient. He had been under treatment for about a year and a half.

The difficulty in making transplantations in cases of extreme hypospadias is to obtain a sufficiently wide tube. If a sufficiently large caliber is not obtained and maintained by sounding the patient will not be enabled to get rid of the perineal fistula or a

new one may occur. The cases published show this plainly. No attempt therefore should be omitted in this operation to obtain a tube wide enough to admit a No 23 to 24 Charrière sound.

This patient has been observed for a considerable period after his operation. The No 3 or No 24 sound can still be passed and fistulae did not recur. A normal flow of urine continues.

W A BRENNAN

GENITAL ORGANS

Ducuing Treatment of Hydrocele by Filiform Drainage (Le traitement de l'hydrocele à l'aide du drainage filiforme étacé) *Bull et mém Soc de chit de P* 1918 xlv 1751

Ducuing's method of treating hydrocele does not require the use of an anesthetic. He introduces an Emmet needle laterally into the scrotum and perforates the tunica vaginalis. A strand of silkworm gut is drawn through by the needle and this is tied in front of the scrotum. A series of such strands are placed separated at intervals of about 3 cm. A large hydrocele may need a dozen or more. Secretion ceases toward the eighth day and recovery is effected in two to three weeks. Two children two adults and three old patients were thus treated. There was only one recurrence due to the threads being removed too soon but this case cured on secondary treatment.

Chaput says that in certain conditions filiform drainage can have unfavorable results such as scrotal oedema, retention of the serous fluid in the ac subcutaneous serous suppuration and recurrence of the collection. The advantage of filiform drainage is that it does not require that the patient be anesthetized nor confined to bed. The method now employed by Ducuing is a modification of the older seton method of treating hydrocele.

Both Kirmisson and Broca are of the opinion that Monod's method of alcohol injection is preferable to that proposed as it does not cause infection.

W A BRENNAN

Newman D Primary Sarcoma of the Prostate Rapid Growth Following Injury *Bull M J* 1919 1

The patient aged thirty-five while at work received an injury to the perineum. Prior to the accident he enjoyed good health. There followed dysuria, hematuria and retention. Rectal examination showed a round smooth soft enlargement of the prostate. Suprapubic cystostomy revealed a soft fungating growth traceable into a small cavity in the prostate. It had well defined walls. The tumor rapidly increased in size and in three months filled the bladder. Death occurred from hemorrhage.

The author concludes that prior to the accident there was a small encapsulated round celled sarcoma in the prostate. The capsule was ruptured by the blow and the tumor extended rapidly.

I S KOLL

urethra and its tip made to protrude from the bladder through the suprapubic incision. The tube attached to the Hagner bag is pushed over the tip of the staff and the latter withdrawn thus bringing the bag into the bladder. The bag is inflated by injecting air with a large syringe and is drawn into and against the vesical orifice and fixed in position by applying a clamp over the wire anchor here presented.

A slender piece of tape or silk suture attached to the loop on the bag is brought up through the suprapubic drainage tube to facilitate its removal.

No irrigation of the bladder is necessary. The securely anchored rubber bag prevents hemorrhage and the drainage of urine soon becomes clear. After a few hours the clamp on the tube is loosened and the air allowed to escape. If hemorrhage recurs it can be reinflated and anchored until sufficient time has elapsed to insure control of bleeding. If no bleeding occurs in twelve to twenty-four hours the bag is deflated and removed by the tape attached to the loop either through the suprapubic drainage tube or both may be removed together and a catheter drawn into the bladder through the urethra by engaging its tip in the outer end of the tube attached to the Hagner bag. The catheter is then anchored at the meatus and suprapubic drainage dispensed with or a smaller suprapubic tube inserted to remain a few days. H. A. IRVING

MISCELLANEOUS

Goldstein, A. E. The Diagnostic and Prognostic Value of Blood Urea in Urology. *J. Am. Urol. Ass.* 1918 LXVI 1957

In this paper the author reports upon his investigations carried on during the past three years on the value of the blood urea determination in urologic cases. The number of cases was 104 upon which 80 blood urea determinations were made. For purposes of comparison three other tests were employed: (1) urine urea, (2) phenolsulphonaphthalein and (3) chemical and microscopical examination of the urine.

The method of procedure was as follows. Upon admission some urine was taken for chemical and microscopical examination. An intravenous injection of phthalein was given and blood for blood urea collected. In from three to five days the same procedure was carried out to determine the course of the case. These two tests furnished a basis for the decision to operate at once or to employ further preliminary treatment.

The amount of blood urea varies normally between 0.3 and 0.6 gm. per liter of blood. Only rarely did a patient with blood urea above 1 gm. per liter of blood survive operation and the prognosis was never grave with a urea below 0.5 gm. The prognosis in cases between these two points was only fair and depended upon whether the stationary point reached was a progressive decrease or a progressive increase in the amount of blood urea.

The principal advantages of blood urea over urine urea are stated as follows: (1) the great variation which exists in the normal and leads to inaccurate interpretations on which account it is difficult to determine when one is dealing with a borderline case; (2) the disappointing results produced by the quantitative estimate of this normal urinary constituent because of the fact that the amount of these substances excreted depends not only on the functional activity of the kidney but on the amount of these substances carried to the kidney for excretion; (3) the inability to obtain a correct and fairly accurate twenty-four hour specimen of urine.

When renal surgery is necessary the blood urea test in itself is not sufficient. It may be employed only as a prognostic agent. For diagnosis the excretory tests phthalein, indigocarmine and urine urea are indispensable. In 60 per cent of cases the various tests were found in agreement; in 40 per cent there were disagreements in the results of the tests. As a prognostic agent in genito-urinary surgery, blood urea is considered almost indispensable. In the various types of obstruction inaccuracies in the excretory tests are inevitable as the bladder cannot be completely drained by voiding or catheter.

The following conclusions are appended:

1. In blood urea a valuable test is furnished to be used in the diagnosis and prognosis of urologic cases.
2. It may be employed in all urologic cases without any specific limits.
3. Blood urea as a prognostic agent in urology is practically infallible if employed by the method followed by the author.
4. It is a simple procedure and may be used to advantage when the excretory tests such as phenol-sulphonaphthalein, urine urea, etc., cannot give the desired information.
5. When relative kidney function is desired it should be used in conjunction with the excretory tests.
6. In a case with a blood urea of more than 1 gm. per liter of blood the prognosis should be considered grave and less than 0.5 gm. as good.
7. An oncoming uremia may be diagnosed long before the clinical signs make their appearance and before the excretory tests can give the information.
8. Its employment will materially decrease the percentage of mortality held against the urologist or general surgeon.

H. A. FOWLER

Hinman, F. Chart for Recording Cystoscopic Examinations. *J. Urol.* 1918 II 433

The aid of the cystoscope forms the basis of an accurate differential diagnosis. It recognizes vesical complication. It gives a better selection of cases for suprapubic or perineal attack. It insures operative thoroughness.

Hugh Hampton Young in 1903 proposed a chart of eight cystoscopic fields arranged in a circle by which the circumference of the vesical neck could be outlined. The necessity of additional views to obviate making two or three diagrams of the one

cases on the present and the method
 elaborated by him to its present accurate form
 Cunningham has also devised a diagram for the pur-
 pose of charting both the shape of the vesical orifice
 and the length and the distention of the prostatic
 urethra. From these facts he has deduced the
 following principles for the prostate:

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The tenth principle is that the prostate is considered to be a
 simple product of the vesical orifice and the length of the urethra.

T. O. D. OZBO

SURGERY OF THE EYE AND EAR

EYE

De Lapersonne F Results of the Early Treatment of Ocular Wounds (Resultats du traitement précoce de blessure o bito oculaires) *B II Acad de méd* Par 1918 LVII 613

Lapersonne's war experience leads him to believe that early operation as conservatively done as possible and immediate suture is almost an absolute rule in ocular surgery. This is the only method that has given really favorable results both as regards visual function and lessening mutilation.

Wounds of the eyes are usually associated with other facial and cranial wounds so that the war ophthalmologist must of necessity be able to treat these lesions as well as those of the eye alone unless there are other specialists in the same service. On the contrary when the general surgeon is called upon to do urgent eye surgery, enucleation is too often the operation performed at the front. Since the more recent installation of special ophthalmologic service in connection with the evacuation stations, the author has been able to operate generally within forty-eight hours after injury.

In 351 patients received since this time an important operation was necessary in only 83 cases. At most all were done under local anesthesia in only 3 cases was a general anesthetic necessary. Four per cent novocaine solution with adrenalin was used. Duverger's technique of local anesthesia is followed inserting the needle as near the optic ganglion as possible. It has never been necessary to use more than 30 to 35 cc of novocaine.

The wounds treated included 21 orbital and peri-orbital fractures with contusion of the ball, 26 large penetrating wounds of the ball, 11 severe wounds involving the walls and 11 with traumatic cataract. Early enucleation was performed in 16 cases and late enucleation in 3, there were 65 orbital or peri-orbital operations, both of the osseous and soft parts including the extraction of pieces of projectile. Partial exeresis of the ball was done in 18 cases.

Orbitotomy as a route of approach to the orbit was practiced in 30 cases. A curvilinear incision following the bone edge is used. This orbitotomy permits examination of the orbital contents and also of the peri-orbital sinus.

Primary suture has been the rule in all early operations contrary to the practice in the earlier years of the war. In some cases primary autoplastics were necessary. Such a primary reunion after surgical clearance, disinfection and removal of foreign bodies ought to be a fixed rule in urgent ocular surgery. The results obtained show that the method is highly satisfactory when operation is done within forty-eight hours of injury. For conservative operations this

time limit is rather too great as intra-ocular lesions with a retained foreign body rapidly become infected.

W. A. BRENNAN

Friedenwald H Ophthalmoscopic Conditions Simulating Sarcoma of the Choroid *Am J Ophth* 1918 I 822

Two cases are reported of conditions resembling sarcoma of the choroid and others more or less similar recorded in the literature are cited.

Case one was a young girl who developed a large bluish gray rounded elevated mass in the upper nasal quadrant of the right fundus. This was seen by several ophthalmologists and the probable diagnosis of sarcoma made. The microscope showed it to have the typical characteristics of an infectious granuloma with a focus of suppuration.

Case two was a boy aged twelve in the temporal periphery of whose right fundus was a rounded large neoplasm pinkish in appearance and having large convoluted vessels on its surface. There were numerous small white effusions studding the entire macular region. Transillumination gave no shadow.

Several colleagues concurred in its probably being malignant and enucleation was done. Examination showed nothing to suggest a neoplasm the picture being typically that of an inflammatory exudate undergoing organization the pathologist regarding it as retinitis with massive exudation.

S. S. HOWE

Lowman C. L. The Effect of Faulty Skeletal Alignment upon the Eyes *Am J Orthop Surg* 1918 XVI 459

References have been made by several ophthalmologists to eye conditions such as myopia or astigmatism influencing bodily posture but nothing is found concerning the opposite condition, i. e. that spinal malalignment may be causative of active or potential deviations of the eyes or of pathological changes such as glaucoma or sympathetic conjunctivitis.

In his examination of patients the author has found points of tenderness which he refers to as tension spots and such patients voluntarily stated that they were worse after sewing, reading or watching motion pictures. In case of neck injuries eye symptoms due manifestly to injury of the cervical sympathetic have been noted and patients undergoing orthopedic treatment reported improvement in eye complaints. More marked eye muscle imbalance was found in orthopedic patients than in the usual classes of eye cases and occurred more frequently.

The cervical sympathetic plexus is described and the ciliospinal center is stated to be subject to direct stimulation and irritation by arthritic processes in

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S S HOVE

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w th the function of the nerve Paralysis of the
rectus has lso follo ed the ma toid operati n and
in such cases trauma has probably been the causa
tive factor

The paralysis may clear up in a few days but
usually persists for weeks or month with a possi
bul ty of pe manent impairment of the function of
the n rve The treatment should be left to the
otolog st J R BUCHERD

Kahn A Outl n s of a New Instrum nt t Be
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te l d to a handle fo e sy manipulation

Th t l nstrumnt consi s f a r d g du ally
ap lly hap d at ne end At the the end
handle s attached placed at an a gle f r e a s y man
pul t n and th the ider f n t obstruct n the
v The r d g ooved fr m pe to base by four
gutte an equ l d t nce apart The rod is si n
ch l ng Th e inches fr m the apex the r d s
n t h e l t t the sl t n th first instrument The
p f the d r ough ned by extremely m nute
p j t n and the pr jection at the top of the apex
t l h g h e t

H l l ng the plate in the left han l the graft is
pl eio t l plate v r the notch the center f the
h ft o r p n l ng t th ound hole in the plate
i d the r d ith the ap up is held in the ri ht
h nd The pl te i then passed down v r the rod
th d g th gh th oun l hole in the pl te
The g a f t n hugg the rod is ca d nt the
ty n l by m e s f p ssing a long needle or
te al ng the groo in the od the g f t i
p e d t o the cav ty By suddenly p l l g
the r l ay the g a f t r m n OTTO M ROTT

SURGERY OF THE NOSE, THROAT AND MOUTH

NOSE

Davis G E The Blood Clot Dressing in Frontal Sinus Surgery *Laryngoscope* 1919 xix 5

Davis reports a successful case of blood clot dressing following a radical frontal sinus operation. The modification from the technique usually employed after the mastoid operation was the preliminary packing of the wound for twenty four hours with iodoform wool. This departure was deemed advisable for two reasons:

1. The necrotic condition of the walls of the orbital abscess cavity all of which pyogenic tissue could not without hazard be removed in its entirety and which remaining would inevitably infect a primary bloodclot dressing.

2. The desirability of moulding and supporting the soft tissues of the orbital arch in order to preserve the normal contour with healing.

Save a single strand one end of which was left protruding from the external temporal end of the orbital wound and the other end through the infundibulum into the nasal cavity the entire packing was removed at the end of twenty four hours from the wound cavity and the latter allowed to fill with blood. Twenty four hours later the remaining strand of packing was withdrawn. On the third day half the stitches which were through and through silk were removed and the balance were removed on the fourth day when the wound was healed completely by first intention.

In spite of the removal of the entire frontal wall of the sinus the orbital arch and floor of the sinus the contour of the orbital arch is preserved with almost no deformity whatever and only a scarcely discernible linear scar.

Otto M. Port

Graham H B Frequent but Neglected Evidences of Syphilis from the Side of the Nose Accessory Sinuses and Ear *1 n J Syphilis* 1919 ix 26

Graham does not discuss the common well known diagnostic features such as the ulcerations and necroses due to the thromboses of the veins on account of the pressure of the small round cells but on the contrary he draws attention to symptoms often overlooked due to the deposit of small round cells *per se*.

The membrane of the upper respiratory tract is boggy and has a bluish tinge the swelling not subsiding on application of cocaine and adrenalin. The patient complains of stuffiness a mucoid discharge and frequent attacks of cold in the head.

The sinuses show the result of infiltration of the periosteum by the blotchy cloudy picture of the X ray in the absence of pus. The nasal nerve lesions are manifested by (1) inability to perceive orders (2) vasomotor disturbances previously referred to

and (3) pain usually of the referred type. For instance pain from the sphenoidal region will be noted in the ear or back of the head and from the frontals to the top of the head that due to enlarged turbinates is a heavy pain over the eyes.

As regards the ear the manifestations may be from the middle ear or from the internal ear and eighth nerve. In the former a thick ropy discharge without pain is significant.

Cochlear symptoms suggestive of syphilis are (1) shortened bone conduction (2) probable lateralization (3) Pinne positive in the presence of impaired hearing (4) islands of hearing demonstrable (5) tinnitus.

Vestibular symptoms suggestive of syphilis are (1) progressive reduction of the nystagmus time (below 26 seconds) after turning or reduction remaining constant in the presence of other evidence of syphilis (2) absence of a turning reaction with a caloric reaction present or vice versa (3) irregularities in the reactions between the vertical and horizontal canals (4) vertigo present without nystagmus or exaggerated after turning or chronic nystagmus with out vertigo.

The main characteristic in all is the disharmony existing between them.

Otto M. Port

THROAT

Zahorsky J The Remote Result of Tonsillectomy in the Young Child *1st Int M J* 1919 xxvi 67

Zahorsky has made a study of 150 children aged two to twelve years in order to determine what effect the removal of the tonsils and adenoids had on the nutrition and health of the child six months to five years after the operation. He states that his experience indicates the probability of an increased tendency to pneumonia and because of this probability he states that the tonsils should not be removed for fancied or trivial causes in a child under seven years of age. When the tonsils have become diseased and useless however they should be removed at any age.

Zahorsky gives as indications for the operation:

1. Persistent enlargement so as to cause persistent mouth breathing and deafness.

2. When the tonsils are deeply embedded and cannot discharge their contents and abscesses result.

3. When the tonsils have become scarred from scarlet fever diphtheria or a severe streptococcus infection.

4. When an infected tonsil leads to persistent adenopathy and does not yield to medical treatment.

5. When an attack of endocarditis is preceded by a tonsillar infection.

The reason offered by Zahorsky to explain the greater liability to pneumonia in children who have

had the r t l mo ed is that the tonsil are the
first line of defense and the recurrent inflammation
suppl st the system nt bodies by me s f hich
more se o s esp to y nf ct ns are ward off

O M R T T

Boeblinge M P Retr pl ryng l Ab c ss N
O I M U S J 9 8 1 49

Petroph ry e l b ce e sentially a d cease
of infancy d e ly chldh d The e have been
rep rt f d h f all ages It can be
ca sed by t b ulos f the cervical verteb æ or
any i flm t ry condit n about the m uth no c
orph ry It n y be acute or chr n c In sion
i t h the t p yngeal space occu mo t often
th ough th lymphat c oute

Early ec gn tion is difficult hle l t many
case r un e gni ed One of th t clinical
ign dv pha ia varying i degre f om difficulty
in s ll g to abol te inability t s all
There resp atory dist css e tended h n n us
expr n oupv c g h and the mouth i l l l
with ec t n D at le am n tion e e l l g
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e ted and wh t the eti l gy of th absces i The
auth r rep t th pe ati f on c se with dden
d ath The c u e unknow n f E B

MOUTH

Ly n C J C n deration f Som D nta
An m lies J M f S t M S 9 8 37

Ly calls atte t n t the great ch nges wh h
take pl ce n the ja s a d the teeth they become
smaller n e the teeth ch nge their sh pe bec use
man no longer requ d to procu e h food
ith his teeth o p ote ct h m elf w th his j ws
Th temporal mus le zvg m t a ch and ja s
d c e n s i e d e not so prominent

Th ete logy s l gely b rught abo t by the
arre ted d lopme t of the os e u s t cture of the
j w such impacted l we th d m la and cuspid
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M N T D R I

D bleday F N L c l Anæ t l si in D nta
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S t Od t l

Doubleday afte l vng c nsiderable e p enc
ge e lanæsthe a h s con l ded that no ne
is at p ent the sifest and most t s fact v d
The E. tabl c t i n n o gm f ov a d
ooo gm of sup e n ar employ d t ea h
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no ca e f tabl t e added and p ured to
ste le l u h lde th s then d aw n i n t ster l ed
all metal sv ge th eedle s s c e d i to the
sv ge turned n le up d and tapp d to free
fro ll air The s lut on then ready for u

He recommend the follow ng methods of induc ng
de t lanæsthesia

Submucous infiltration fo the anæsthet zation of
the nerve t vgs go ng to the pulp and periodontal
membrane be ng used for filling of teeth or for the r
mmed te separation It s employed for all the
teeth e cept the lower molars

Submucous anæsthe a of the ma llary molar
teeth is obta ned by utilizing the bayonet attachment
ith the short needle the injecting surface of the
needle being lirected f r ard and in rd The
mouth should be nearly cl sed The needle is passed
nto the reflection of the mucous memb ne opposite
the m x illa v th d molar and d ected up ard and
in ard unt l the posterior supe io dental foram na
ar r a h l Their posit on depends upon the devel
opme t f the m x illa y antrum somet mes the
j t g s u face of the needle is oppos te the fora

hen th hub of the needle is at the occlusal
m g i of th t l molar and sometimes hen the
hub is at the eral marg n The needle is moved
sl v ly up l d n bath ng the v hole of this sur
fa th t j c cm of the solution Care is taken
t h e the ne dle t o high rather than too low
h t v l l t nd to m ke the fluid descend along the
b v m scula d f scial plane

Al l r anæsthesia is advoc ted for obtunin
sthes a the molar reg n of the mand ble A
f l r p f the solut on ha g b e inserted
be e th th g m upon th bucc l s u face f the root
s all op g is drilled th ough the outer alveolar
plate i t the cancellous t ssue of the mand ble
th ough th s open ng the eedle is i serted and a
fe m ms of the l tion e injected A e j s at s
fact r sthes a bt ed

I r r g al an th s i the m x dible a b y net
attr hm t is rd i d to the syr e a l ng needle is
emplo d f compl te bl ck i of the ntra o bital
ne ve eq i ed Th eedle is inse d as ne l v as
possibl i e ith the b cal ts of the third
m l r the p t ient h i g t le teeth almost closed
The dir ct n of the needle is up d and i ward
t w d th m dlin t njecting su face is d rected
f d tow d the poste i e s u face of the ma illa
Ab ut c m f the solut on a introduced

T o s ul methods may b util zed for reg o al
an sthe ia in the mand ble

A short h b and lon needle are employed
The p t ient h s his mouth open 4 cm The
needle p ssed o e the premola teeth of the oppo
s t e de nto the nne third of the ante or pl r of
the f uces n the s de to be anæsthet d Th needle
ill e just b lo the occlusal surfaces of the upper
third m lar h i g its injecting surfac d rected
t ward the bone It is then passed b ck i to the
tr a gular sp ce hav g its base uppe most fo med
by the e tern l pterygo d muscle its inner wall formed
by the inter al lateral ligament and the nternal
pterygo d muscle nd its ape by the attachment of
these to the mand ble By pass n the ne dle i f r
half ts depth the injecting surface v ll lie ab ve and
p ster to the lingula coveri g the commencement

of the inferior dental (alveolar) canal 2 cm of the solution are then introduced

The bayonet attachment and short needle are employed. The technique of injection is similar to the above but the short needle is used. Its advantage lies in the fact that it can be utilized when the patient cannot or will not open the mouth widely.

M. N. FEDERSPIEL

Rao R. K. Some Observations on Laryngotomy and Excisions of the Tongue *Madras M J* 1918 1 344

Concerning the question of laryngotomy Rao gives the following indications

- 1 Acute laryngitis with oedema of the glottis
- 2 Scald of the glottis
- 3 Sudden spasm of the glottis in cases of chronic laryngeal disease tetanus or aortic aneurism
- 4 Cases of extreme urgency from impaction of foreign bodies threatening suffocation e. g. small tooth plates in adults and buttons beads sweets coins and portions of toys in children
- 5 Preliminary to extensive operations about the tongue jaws and face attended with much bleeding
- 6 If the air passages become obstructed by blood during operations about the head and face

As for the technique of the procedure the author emphasizes the necessity of keeping exactly in the middle line and of having the landmarks accurately mapped out. The longitudinal skin incision is preferred all bleeding vessels are ligated and the field kept quite dry before opening the cricothyroid membrane. When opening into the membrane the operation should keep close to the upper border of the cricoid so as to avoid if possible the cricothyroid arterial anastomotic arch. The membrane may be opened transversely or longitudinally. Rao warns that the surgeon should at all times be prepared for profuse bleeding so as the better to meet this contingency when it does arise.

Concerning the question of excision of the tongue Rao discusses the three principal side issues

- 1 Whether preliminary ligation of the linguals is necessary
 - 2 Whether preliminary laryngotomy is a dispensable operation
 - 3 Whether removal of glands is a necessary step
- To these questions the author gives it as his opinion

that intrabuccal excisions of the tongue are satisfactorily done with a preliminary laryngotomy but without ligation of the linguals and that removal of glands is absolutely unnecessary. Otto M. Rott

Power D. Cancer of the Tongue *Brit J Surg* 1919 vi 336

In his report on cancer of the tongue Power calls attention to the fact that it is almost entirely a human disease unknown in children common in men and rare in women. Some of the factors which enter into the cause of this disease are irritations from various teeth.

He reports that an examination of the records at St. Bartholemew's Hospital showed 169 persons were admitted with cancer of the tongue from 1909 to 1916. Nine of the patients were women and 160 were men the proportion of men to women being 18 to one. The true proportion as shown by the Registrar General's returns is one woman to 8 men. Seven of the women were married one was unmarried and the social state of the other is not mentioned. Of the 7 married one gave a history of syphilis 2 showed evidence of syphilis and one was a widow who had only one child alive out of five the note adding: She looked as if she drank. None of the women smoked but all had bad teeth.

In the case of the men 93 out of the 160 were syphilitic 62 gave a history of syphilis. Many of the patients had drunk beer to excess but did not acknowledge that they had taken spirits freely.

As cancer occurs sometimes in the domesticated animals syphilis cannot be considered as more than a disposing cause and some exciting cause must be looked for which has become prevalent recently. The increased consumption of tobacco seems to be such a cause. Smoking in public has increased steadily from 1871 until it is now well nigh universal among men women and boys. It is possible therefore that smoking is important in the increasing mortality from cancer of the tongue. The irritant acts in two ways locally for it is partly due to the nicotine and partly to the heat and it is well known from kangri cancer that thermal irritation is a factor in the production of epithelioma. The actual cause of cancer is still undiscovered but if the main factors are known it should not be impossible to discover its nature.

M. N. FEDERSPIEL

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 E m j m b d g g n of the l f l l ng
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H t and Vascu l System

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Phy n x nd C e s p l a g u s

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 S m m r y f a e f f g b dy in the æ s o p h a u
 t R y l N 1 B Ho p t l J G F R E C U
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 A f c d o p m f l l d by h y p t o p h y d i l a t
 t d t t f th æ ph g u t t d by g a s t t m y
 d b q n t d i t t n f th æ s ph æ l s t c t
 E E GRAH m Am J D Child 19 9 65
 F g n b o d y f æ ph g E DURE v U on méd
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Blood

G h type f pl om galy epo t f J G
C a d L D Mo HEAD J Am M A 99 l vi 9
Th f th lymph yt i d ed by m s of
he t W N n J E p M d 99 l 7
Eff t f p t th th l t g lymph
yt m H D T o J E p M d 99 l 4
Eff t f d r y l t th bl d ut m l t d
lymph d t ty J B MURPHY d E STURM
J E p M d 99
Th t p t t f bl d s s th mg t
f hom t ph r H D T a o J E p M d 99
33
Th t f bl t d t pt bl d t
H D T d M G s n J Exp M d 99
5
Cl d at f bl d t a f R Pic ut
L c a d L K R T B l t m m So d hr
d P 98 l 8
Bl o l t fu F C BUCHT L C l d M d
99
S d m trat t f a t dy f h d d
A L C A R J Am M A 99 l 410
Blood t f d th pl t f e t m th d
th t m t f b t t f ham r h g A C GILL
A M A h m n d bst t d gynec P 98 l 7
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Th sc l m tri amin ti ind t bl d
t f MA d S L E J d m ed B d
98 l 34

Bl d nd Lymph Vess l

E ly p t j gulo c t d ms AUM TL
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Th t l t f te 7 rism R GRE
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HE A h d m l d ce P 98 l 48 412
Tra mati r m f th t m l a t r y C
VILLA DRE P h r u g 98 412
R d i l t m t f f l h m h g b y l g t
f th t m l a t d A MALHERBE B l m ed P
99
A f l t f th int alca t d BRAU TAPPE
J d m ed B d u 98 l 53
O u l m t d d t m t f m m m t r
l p H D LNE G h b d d m ed B r
d u 98 l 4
Blood l o d d th r u l a t q d b m P
DERACHE d th r A h m ed belg 98 l 489
C l m d y m p a t h y n d m es E G I R t Rev
g e d l t d th p P 98 l 774
R y n d m e f t m t r g u n F S A B T L C C
l l l n R m 99 l p t 7
A s f n g i t a r d m m b i n d th u r t e a r i
th p u r p r t u n g R v d d d s c l o d e r m
H S I R M d J A t l 99 l 40
G s m b o l i a f th g l t l t r y V I G I E R d J E A N
A r h d m ed t p h m I a 99 c v 53

P is n

Th l u m u l l n th r t m t f t b l
H C T R E Med R 99 l c v 6
Clinical p th l m l d o c l g c l b r i a t p o
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D n t c d m t t n f p o c h r a p a l l d H
GOODMAN J t t M J 99 l xvi 6
A th t e m b k t o n h p t a l N w p o r t N e w Y o r
99 l 60
A th C I HADLEY H h m M th 199
l 9
V t e s t t N I T V I G G Th p G 99
l
T m t f t t by j c t u o f t u t o i n t h e
l H O K I F R D t c h e m d W h e c h 98
l 36
N t p o l o c l d t e t f t h e l u m b s E C H A U V E N
R d h P 98 l 37 P C H U T R O B l t
m e m S o c d h r d P 98 l 643
G g g I M A I R E S S E a d I P E C N I E R J
d p h a r m t h u m P 98 l 334
R e t g s g a r E M A R Q U I S R C L O C T
a d K D I D I E R B u l l t m m S o c d c h r d P r 98
l 645
S m p e u m t l f i n d g s o t h g n f i c a c f p t i
a m u l G A E R T S P r m d P 98 l 507
413
D p h t d n e t o f w o u d R M J A N E S a n d N
O T m s C a d P c t & R 99 l 4
P l f t h b l o o d n d t h b o n e m r o w e r t f m f
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S t p h y l o c c a l p t i a m a s a d c a o f t p h y l o c
m V M O N N I E R J d e m d t c h i r p r a t P a 199 c
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C h a e f t h f i g r s D W M O T C O M E y d G D
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Su gical D i g n o s i s Path l o g y a n d
Therapeutics

The g a l t e m t o f t u b e l d o p t h i e s L
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E p e r i m e n t a l S u r g e r y a n d S u r g i c l
A n a t m y

D i r e t t u o f r a y s t s p l t b l c c f m i c e
E H I L L J J M o r n d W D W I T H E R B E E J E p
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Th l y m p h c y t t l a d i n d u c e s t a t
t r a p l t d a n c f l e c t f d r y h e t a n c t
t p l a t d c a i n m e J B M U R P H Y a d E S T U R M
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JUNE 1919

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JUNE 1919

ABSTRACTS OF CURRENT LITERATURE GENERAL SURGERY—SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE

Stevenson W C Technique of the After Treatment of War Injuries by Radium *M d Press* 1919 cvi 7

Since 1914 the author has been treating soldiers with adherent scars painful scars and stiff joints the results of old tenosynovitis with radium emanation needles. Only very exceptionally has he found that it did not produce rapidly some improvement and occasionally it caused very marked improvement in cases which often for long periods had been unaffected by other methods such as massage ionization and whirlpool baths. Through long experience and careful study he has worked out the following dosages for gross scars.

Arm forearm thigh and leg Over one area of skin 2 to 3 mc over two adjacent areas of skin 1 total of 8 to 3 mc over three adjacent areas of skin a total of 10 to 4 mc over four adjacent areas of skin a total of 40 to 50 mc over five adjacent areas of skin a total of 50 to 55 mc and over six adjacent areas of skin 1 total of 55 to 60 mc

Knee elbow and ankle Over one area of skin 5 to 10 mc over two adjacent areas of skin 3 to 5 mc over three adjacent areas of skin 30 to 35 mc over four adjacent areas of skin 40 to 40 mc and over five adjacent areas of skin 40 to 4 mc

Hand and feet Over one area 1 to 1 mc over two adjacent areas 3 to 5 mc and over three adjacent areas 3 to 5 mc

In the case of the hand and foot and thin forearm skin surfaces diametrically opposite one another should be considered adjacent areas.

For the treatment of old tenosynovitis and adhesions due to injury and disease the following dosages are employed.

Hand Between fingers 3 to 5 mc for each interdigital space (total 10 to 1 mc) two areas on palm and two areas on back of hand 5 to 10 mc each (total 50 to 40) front and back of wrist 6 to

16 mc each (total 10 to 3 mc) total for hand and wrist 40 to 95 mc

Elbow 35 mc for three areas 40 mc for four areas shoulder 6 mc for five areas knee 7 mc for seven areas ankle 4 mc for four areas 48 mc for five areas foot 3 on dorsum 3 on plantar surface (total 40 to 50 mc)

For tender areas due to involvement of nerve endings 3 to 7 mc is used per area of skin. Similar doses should be given over nerves and nerve plexus and over arteries with their sympathetic nerve supply in the neighborhood of wound scars the object being to stimulate the nerves to perform their normal functions and to overcome what may be called for want of a better term partial nerve block.

The intervals at which treatment may be repeated are

For scars After four to six weeks Four treatments in six months

For painful areas After two to five weeks

For tenosynovitis A dose of 40 cm is repeated in fourteen twenty one and twenty eight days and every month until 6 doses have been given. A dose of 55 mc is repeated after two to five weeks.

Kirmisson E Pediatric Surgery at Different

Agas (*La chirurgie infantile en usage aux différents âges*) *Bull Acad de med* Par 1919 lxxvi 91

Kirmisson reviews the indications for surgery in the case of children during first infancy to the age of 5 years from the age of 5 to 13 years and from 13 to 15 years.

In early infancy the conditions usually requiring surgical treatment are deformities such as club foot spina bifida hare lip etc and certain inflammatory conditions including appendicitis. Special attention is called to the occurrence of intestinal invagination in young children. When during its first or second year a child in good condition of health and development suddenly exhibits symptoms of intestinal occlusion and at the same time shows Cruveilhier's sign the emission of sanguinous meconium from

the anus the p nce of intest n l nv gination m v be concluded The safety of the pat ent depends pon the quickness f lagnosis Du ing these o d pe od of childhood test l invagination is very a e

Append t i one f the m t mp r nt rg al co d to in hilen a much be a se f ts frequen y t g ty It i e ho e e lurin the t st t

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The m st mmo c d t the l g qu g u g v s f tu f th f mu Th s gene allv luet mu ul c t t s dur ng a fall An almo t c n t n t s g n f th g h f tu s n h r st childhood n effusion in the kn e jo nt ithout inv l m t f th k ee ts l l v the traumat m

O t om el t s n infancy c u mo ft the femu hle n hld h o d nd dolesce ce the tibi m pt to be aff ted

Sug al tube loss f the large joints is r e d ng the tw n st yea s of life but cases e bse ed f s p e h c al t be ulous lesions c tte el o e e the hole body alo of genitrl t b r ul c t t bat m u h b expect d

Def mites of the locomotor appa t s l s s g u al gum co va a and d f o m t s f the f ot are see espec illv in adole cen

Bo e a l jo i t tuber lo p t l lv a l eise ot v ng p sons n t w To this k r m s h lds h l l l o r pon bl

W A B A

ANÆSTHETICS

F r r R E Lo l Anæ th i in Ch ld n I / /
M / / 83

Local anæ th h bee us d by the auth r fo hldren n a n o l y 7 of h h as it necessary to add inal t n æsthesia R f e c n s m de ls to Hagg r l ho eported f t ably on the u f vo ain in conge t l hypert oph c stenosis

The restraint n c y the nt d c t on f voca s much less th n th t d n ar l equired n th adm n st t n f g ner l n æsthesia Sha p d s s c t d f l t action n l manip l t n must be observ l C les et action pull n f t s s e m v n ce state d d t l inh l t n e th s

Local anæ th ults mor eff t en t e intra abdominal pr ssur m e sh c d bd m d less sce l m t ion th general æsthesia Th organ e b ught into e by ertic l t e t on and tilting of the b d C mplete n l t r t n should be made b f the operat o s begun S ble m l ather tha t adermal j ection

shoull b m l t st r l the fluid should advance ahead of the p t of the needle

The concl l a n e as follo s

In operat ns pe forme l un ler local anæ thes a th pschic element is n t s important in chld en s n lult

Less rest aint i nece ry du ing the admin tr t on of local an sth sia than during the admin t t o fge r l n æsthesia

3 Much m etact l m e efi el techniq e ar required in operating up n chld n un der l r æsthesia t l i n d e r g n ralanæsthesia

4 The m g n f s fety v p e ed by n oca n e gene al n æsthesia is as g at fo chld en as for adults

All g p r e nt ge of bad r l k s should have the b t f th g f s fety

6 Mo e c ten i e applicati n of no oc n n the surgv of children is indicat l A mo e common use f th d u g n this clas of cases would benefit th c f med c e s well s the art of surge y

V E D 1914

| D rs | Sp n l Anæ th | C ed Out in the |
|---------|-------------------------|--------------------|
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Since o 3 the author has performed 3 opera t on und r l æsthesia in case which ma l c n s de ed peace t e surgery r ther than a ge v The e cluded cre f m al he n c s e s f hyd cele cas s of appe d t s d al rge numb f s e fract s etc Sp n l r æsthesia vas ne er fo nd to dd ny p ticular eleme t of shock to the t um t c s l ck l acady isting v n in case of la ge amputati ns In some in trances t s necessa y to fi h the operation und r chloro r m or etl r but the lo ble in æsthet d l n t pp r to have nv p ticular effect

I t l author s pin on f n al a æsthesia id al jroducin th m n m m f shock If is pe s aded that surgeon h ha l r se ed it h v lo e so be ause th v h e n t j e e d in the tral of t h æ not tr iel to m lfy the or nal tech nique o ha e r g rat d the d sag

Lo sp al an sth sia i vocated o l v f r pe t n the lo er limbs pelvi d abd men the try h t u eth l of Jo nesc ben usel th me l h c t In the be n ng the author mpl yed t l v for ope t i o s of sho t l at on but g t th e celle t results t as g al lly e ten l d to c er alm t all oper tions i th p t e f e r l t o

The n æsthet c use l is o o o s l u t on of s l ph te of st ych d f m 3 t 5 c g of t v i cc d to h ther sh r t o r l g operatio y to l e d ne An injection of mo ph n is g ven h l f an h ur befo e the æsthes

I r oper t n the lo er l mbs the i u al r n d th abdom n abo e nd belo the m

bicus the injection is made between the twelfth dorsal and first lumbar vertebrae. For operations in the pelvis or genital region half the solution is injected between the twelfth dorsal and first lumbar vertebrae and the other half between the third and fourth lumbar vertebrae in the biline line corresponding to the space between the fourth and fifth lumbar vertebrae. For perineal operations and those on the rectum and anus the injection is between the third and fourth lumbar vertebrae. Anaesthesia lasts from three quarters to a full hour according to the dose.

The sequelae observed during operation have been general malaise in about one third of the cases with sometimes a little vomiting or respiratory trouble. The duration of these sequelae however is usually very short.

Postoperative headache is observed only rarely in the author's present practice. Occasionally there is a vesical paresis which lasts at the maximum about 36 hours.

Spinal anaesthesia is not suitable for patients with a history of alcoholism.

After the enumeration of the advantages of spinal over general anaesthesia by chloroform and ether it is shown that spinal anaesthesia with strychnine does not cause a decided fall in the arterial blood pressure. The study of a number of the author's cases which are reported shows a remarkable stability of the blood pressure and decrease being very slight. The findings show also that this mode of anaesthesia does not add to the factor of shock.

W. A. BRENNAN

Harries D. J. Cardiac Massage in Chloroform Poisoning. *Ind. N. M. G.* 1909 liv 53.

Harries reports the case of a man 4 years of age who was admitted to the hospital convalescing from dysentery and who later developed signs of early ascites which progressed until a lymphangioplasty was decided upon.

The field was prepared under chloroform anaesthesia but before any incision was made the operator was notified that the patient had stopped breathing. There was no radial pulse and no cardiac sounds could be detected with the stethoscope. Artificial respiration tried for two or three minutes was without result. Reparations having been made for a laparotomy the operator decided to attempt cardiac massage while artificial respiration was continued by an assistant and the anaesthetist. Through a 3 inch median incision in the upper abdomen his right hand was placed on the under surface of the cardiac portion of the diaphragm. Then with his left hand over the cardiac area externally the heart was subjected to a series of rapid squeezes between the two hands at the rate of about fifty or sixty a minute. After the tenth compression it began to beat at the rate of ninety to one hundred beats a minute but stopped after thirty beats. The squeezing was then repeated and after the fourth compression the beating began

again. At first it was very irregular stopping at intervals for two or three seconds. After about ten minutes of this irregularity the heart beats and pulse started alternating this alternation continuing until the onset of the final collapse which preceded the patient's death sixteen hours later.

Natural respiration began only with the onset of the alternation. As soon as the patient seemed to be out of danger four lymphangioplastic silk threads were rapidly inserted and the abdomen closed without further anaesthesia. Consciousness was not regained until two hours later. Soon after midnight the patient collapsed rapidly his pulse rate going up to 100 or more. The ordinary methods of treatment were tried with little or no result and death occurred at 2 1/2 m.

Two interesting facts in this case to which attention is called were (1) That the heart could not be felt through the diaphragm when it was not beating but as soon as it began to beat the cardiac impulse was much more distinct than the apex beat on the chest wall and (2) that the color of the mucous membrane of the lips was restored after three to four heart beats whereas the color of the peritoneum returned only after a dozen beats.

LUCIAN H. ANDRA

SURGICAL INSTRUMENTS AND APPARATUS

Rood. New Haemostatic Apparatus Especially Applicable to Pulmonary Hemostasis. (Nouvel appareil pour l'hémostase spécialement applicable à l'hémostase pulmonaire). *Par. S. Ch. Urg.* 1918 x 41.

The principle upon which Rood's haemostatic apparatus is based is the difference between the atmospheric pressure and the arterial pressure of the blood. The atmosphere supports a column of mercury 6 cms high while the arterial pressure supports a column of only 16 cms. The apparatus consists of a flexible tube which can be introduced through the trajectory of a wound and insulated along this trajectory until it reaches the haemorrhagic focus. The tube ends in an inflatable bulb of varying form and dimensions. When the bleeding area is reached air is pumped in through the stem the bulb is inflated and presses against the bleeding vessels thus mechanically stopping the haemorrhage when the pressure thus exerted overcomes the arterial tension.

Pneumatic haemostasis Rood says is superior to ligation and to the haemostatic band because the circulation is not stopped and the danger of ischaemia and gangrene is obviated.

The use of the pneumatic method is especially indicated in pulmonary haemorrhages and in limb and cranial haemorrhage due to external causes. It is applicable also to hepatic splenic and renal haemorrhages when an immediate surgical operation is not possible. In the latter it is superior to operation as it does not call for the removal of the organ.

W. A. BRENNAN

the treatment should be whenever possible an immediate closure of the dura after the preliminary sequestrectomy removal of all foreign bodies and thorough cleansing of the cerebral wound.

If extensive lacerations of the dura render suture impossible the integuments should be sutured primarily without drainage or plugging with gauze. Only in very exceptional cases when a hemorrhage cannot be stopped by other means is the surgeon warranted in effecting hemostasis with a gauze plug.

Immediate suture of the dura realizes the best conditions for the protection of the cerebral cortex. It prevents secondary complications such as hernia cerebri or Jacksonian epilepsy. The suture of the scalp affords a bar to outside infection.

The presence of a shell fragment intentionally left deeply embedded in the brain substance need not prevent adherence to the course described. In such case the dura and integuments are sutured after surgical sterilization of the track made by the projectile which requires more minute attention here than elsewhere in order to prevent external infection.

The author has performed primary suture for craniocerebral injuries for the past eight months without any complications. Only two slight accidents occurred: one hernia and one abscess, but in both these cases the lacerations of the dura were so extensive that the edges could not be approximated. In all other cases excellent immediate results were obtained. From this it would seem that primary suture is a solid advance in craniocerebral surgery. Good end results the author believes may also be anticipated as healing by first intention is the best guarantee against irritation, external infection, and cicatricial adhesions which are the bases of all secondary complications in this type of injury.

W. A. BRENNAN

Dandy, W. F. Fluoroscopy of the Cerebral Ventricles. *Bull. Joliet Hosp.* 11 p. 1919, v. 29.

If air is substituted for the cerebrospinal fluid in the ventricles of the brain, an accurate outline of the lateral ventricles will be cast in a roentgenogram or may be observed fluoroscopically. The size of the ventricles examined has ranged from normal to extreme grades of dilatation in advanced hydrocephalus. From 0 to 350 cc. of air have been introduced and in over 75 cases in which it has been used no deleterious results have occurred. For ventricular fluoroscopy the vertical rays and the recumbent position are best. The horizontal rays with the patient sitting are very useful to demonstrate the movement of air in the ventricle and to understand the necessary positions to be assumed in shifting air from one terminus of the ventricular system to the other.

Regarding the practical results of the method the author states that in many cases of hydrocephalus with or without other complicating conditions the findings were pathognomonic. In many instances a positive diagnosis could have been

made in no other way. In several the ventricles were normal or nearly so. A number of cases are cited to show the value of the method. Mention is made of the possibility that future development may give information relative to tumor localization.

ADOLPH HARTUNG

Carter, H. S. and Shefford, A. D. E. Note on the Use of Ionization in the Treatment of Certain Types of Facial Scars. *Brit. M. J.* 1919, 14.

The authors report the results obtained by ionic treatment of facial cicatrices consequent upon war injuries to the facial tissues. The most common disability mentioned from this type of injury is false trismus of the jaws. This condition is commonly due to (1) fracture of the ascending ramus of the mandible with actual damage to contiguous tissues, (2) in the absence of fracture injuries of such a nature as to involve fibers of the masseter temporal or pterygoid muscles, in which case movement is limited by the scar tissue, and (3) reflex spasm of all the masticatory muscles consequent upon organic injury of more remote parts.

It was found that the treatment of the scars by ionization results in a progressive decrease in their densities and an increased flexibility, both subjective and objective, with marked permanent improvement in the patient's ability to open the mouth and to masticate. These results were obtained definitely even when ionization was unaccompanied by intraoral gagging or facial massage. The adherence of the scar to osseous tissue offers greater resistance. In such cases the treatment has to be prolonged often for a period of three months or more.

M. N. FELDERSPIET

Beck, C. Plastic Operation for Restoration of Eyelids. *Surg. Clin. Chicago* 1919, 14, 47.

In the case in which Beck performed this plastic operation, the upper eyelid on the right side was entirely missing and in its place was a scar extending from the outer angle clear into the root of the nose. The conjunctiva bulged out in this place, and when the attempt was made to close the eye the protruding conjunctiva was drawn down not quite to the middle line. The lower eyelid had also been burned out and formed an ectropion. The scar above the nose was keloid, as was also the scar on the outer angle of the left eyelid. Because of the ectropion the tears constantly ran down the face making it eczematous.

The technique employed in the correction of this deformity was as follows: First the scar was dissected from the upper eyelid. The lower lid was also freed of cicatrices by accurately resecting the scars from the portion below it. After it was made movable the upper and lower eyelid were brought together and sutured by three stitches over the eyeball. A large flap shaped somewhat like the claw of a lobster was then formed. This flap was taken from the temple where the skin was pliable and sufficiently resistant to stand a twist of 45 degrees. The outer

by turning these flaps toward the septum uniting them in the center. The result was satisfactory. The nostrils are patent and the tubes running to the inner nose are in position and wide enough to allow fair breathing.

The diminishing of the root of the nose by excising a part of the superfluous tissue and the implantation of some cartilage into the tip to give it more prominence still remain to be done.

(C. W. HOCHREIN)

Beck, C. Reconstruction of an Injured Nose. *Surg Clin Chic* 6 1919 in 57

The patient while sawing lumber was hit on the nose by a slab the nose face and left eye being torn. The wound was sewed up immediately and healed in about two weeks. The nose however was left in a crushed condition tilted up with the eyelid averted and scars running through the area. On the inner corner of the right eye was a fistula which discharged continually. The right and left sides of the nose were completely occluded.

In June 1918 under local anesthesia Dr Joseph Beck broke up the atresia of the nostrils dissected the skin over the septum from the frontal bone and inserted into the cavity two pieces of cartilage which he had resected from the eighth rib and which were held in position by quilting sutures passed through the nose near the junction of the frontal bone. Into the nose he put splint.

Following the operation the patient who was a rather weak individual developed high temperature with a great deal of irritation and suppuration on the right side of the chest from which the cartilages had been obtained. This suppuration and temperature persisted until a sequestrum was removed from the bridge of the nose. The chest wound discharged for some time but finally yielded to treatment. The fistula in the right side of the bridge of the nose continued to discharge and when the patient forced air into the nose and closed the nostrils the air came out through the fistula showing that it communicated with the nasal cavity.

A second plastic operation was then performed by the author who proceeded as follows:

First the entire scar over the bridge of the nose was resected leaving a quadrangular defect. Two sides of the quadrangle ran longitudinally on the side of the nose and the other two sides transversely at the root and the tip. This quadrangle was cleared of every vestige of scar. Where the fistula communicated with the nose the tract was dissected. Then a tongue-shaped flap running directly upward and outward with its pedicle just over the artery was dissected over the left eye. This flap was turned down and fitted with the three sides into the quadrangle of the wound. Before it was stitched a piece of bone cut in the shape of a cylinder with two sharp points at the ends was removed from the right tibia and inserted into the defect. One hole was tunneled into the bridge part of the defect and another into the tip of the nose to receive the points of the bone.

The bone was measured so that when it was put into these holes it would not only form a bridge but would also keep the root and tip as far apart as possible thus securing a straight instead of a saddle nose. The flap was sutured into the defect.

Primary union resulted. Two weeks later the bridge of the flap was cut at the root of the nose and the superfluous part drawn upward and backward into the diminished defect of the forehead and sutured exactly into its former position. In this way the forehead was made intact with only a few scars. The fourth line of the defect was then sutured closely into the cut side of the flap.

About two weeks later the ectropion was attacked. First the scar tissue was removed. This left a more or less oval defect about 4 inch wide and 1 1/2 in high below the inner canthus of the eye. Since there was a bridge of healthy tissue alongside the flap in the nose a part of this tissue had to be sacrificed in order to make use of the base of the Italian flap to cover the defect of the eyelid. A right angle flap was cut loose dissected on three sides from the nasal bridge and inserted into the defect of the eyelid on three sides leaving the fourth side to be attended to in a secondary operation.

Primary union took place and the result was very satisfactory. A few improvements will have to be made. For example wherever the flap of the nose joins the nasal skin is a scar which is somewhat retracted. It will be necessary to dissect this scar in order to make a better and more accurate union so that the lines of implantation of the flap are less marked. In addition the lower eyelid will have to be joined accurately to the flap taken from the nose.

G. W. HOCHREIN

Landenbossche. Gunshot Wounds of the Maxillary Sinus. (*Pl*) *es du sinus maxillaire par projectiles de guerre*. *L'opérateur* 1918 in 634

Short histories are given of 16 cases of war injuries of the maxillary sinus. Five were bullet wounds 10 due to shell fragments and 1 a grenade wound. The age of the wound varied from one day to two years the majority being about two or three months old.

Two of the wounds were simple sinus injuries. 11 were complex (3 sinus nasal 2 sinus ethmoidal 1 sinus ethmoido frontal 1 sinus ethmoido fronto orbital 1 sinus orbital 1 sinus pterygo maxillary and 2 bi sinus).

All these patients have either recovered or are progressing to recovery. The aesthetic results naturally vary according to the amount of initial traumatic destruction. Every retraction of the anterior sinus wall leaves a deformity since the wall is situated in the center of the face. Such retraction may be complicated also by displacement of the eyelid labial commissure or nasal ala. Ordinarily however the disfigurement is not very marked since the broad lines of the face are preserved and the cicatricial defects may be remedied by plastic surgery. Extensive resections of the anterior sinus

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C I P P nd Bubbs C H Bone Grafting in
Ununited Fra tu es of th M ndibl th
Sp ial Ref n t th P d l d G ft B t
W J 9 9 67

C l d Bubl ep t 34 a of ped leg it
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NECK

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h m j l g) B l l t e S d c h d p
o s l o 3

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h l l g

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P r a A C r y c a l R i b R m a k U p v a C u i s
C O p a t d U p n (C i l l l c
d n m p e d)
I g d l l M i l 9 9 4

A n t o m c l l y n t h c a s e r p o t e l t h e e c e
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t t s t e r i l e t r e m t B o t h e e u n i t d t h e
r p e t e t e s e p o p h y s b y e a n o f r h o d e
s i Th v e l s o t o t h r r d m e n t a r v r l t h

left one of which was more developed than the right. The brachial artery and plexus passed above the left inferior rib and below that on the right side.

Symptomatically there was a history of neuralgia and paralysis in the left arm which was very intense and accompanied by trophic disturbances. The radial pulse was weak, the arm pale and cold. The diagnosis was doubtful tumor or aneurism.

W. A. BRENNAN

Alamartine H. Traumatic Lesions of the Thyroid Gland and Their Surgical Treatment (*Lésions traumatiques du corps thyroïde et leur traitement chirurgical*). *Presse méd. Par.* 1919 xxvii 107.

Injuries of the thyroid gland in war are generally associated with other cervical injuries. Isolated wounds of the thyroid are rare. Alamartine has observed and treated three: a violent contusion of one lobe by the kick of a horse; a bullet seton wound of the left lobe; and a shell wound with a piece of projectile left in the right lobe.

In the classical text books bullet wounds of the thyroid are generally considered as benign. The author however believes that in war surgery wounds of the thyroid call for definite surgical treatment based on the known principles of thyroid surgery. In wounds in the neck more or less directly involving the thyroid region and showing deep tumefaction the possibility of thyroid hemorrhage must be considered. The clinical symptoms of thyroid traumatism lie almost entirely in the consequent hemorrhage. In ordinary contusions and cutting injuries the hemorrhage is usually profuse and external. In injuries by war projectiles there is as a rule no diffuse external hemorrhage but the formation of a deep hematoma which invades the thyroid, carotid and mediastinal regions causing symptoms of greater or less compression. The nature of the wound is such that infection is to be feared as well as secondary hemorrhages. Early diagnosis and adequate surgical treatment are therefore absolutely necessary. Immediate operation should be directed toward exploration and surgical clearance; a secondary operation should be performed when a deep hematoma of the thyroid region has been found and a later operation when the signs of infection have appeared. As the thyroid injury is only suspected the region must be thoroughly explored. Further surgical treatment will then depend upon the findings.

The hemorrhage may proceed from arterial pedicles, capsular veins or a ripping of the gland. The vessels can be ligated. For a ragged injury of the glandular tissue suture must be resorted to as tamponnade is inefficient. When the injuries are very severe and a lobe is badly torn it may be necessary in order to assure hæmostasis and obviate secondary hæmorrhages to make a more or less extensive resection of the lobe. In these cases the classical technique of partial thyroidectomy is followed. Other conditions such as an

extensive suppuration of the parenchyma of the gland may also indicate a thyroidectomy. A hemithyroidectomy may be called for when there is cystic degeneration. The author's three patients made easy recoveries.

W. A. BRENNAN

Smith F. M. Statistical Study of Simple and Toxic Goiter at Jefferson Barracks, Mo. *J. I.* 1919 19 9 1xvii 471.

In 65,507 men examined at Jefferson Barracks between April 1 and September 1918, thyroid gland enlargement was found in 1,074 or 1.63 per cent. One hundred and sixteen men or 10.7 per cent had toxic symptoms and were rejected as cases of hyperthyroidism or exophthalmic goiter depending on the presence or absence of exophthalmos. The age incidence was from 18 to 21 years. Widely scattered areas of the country were represented. The states in the Great Lakes region had a comparatively low percentage of simple and toxic goiter.

One hundred patients with toxic goiter were carefully studied with regard to subjective symptoms and physical findings. Fifteen per cent were more irritable than usual and subject to insomnia but otherwise felt well. Sixty-six had palpitation of the heart which with nervousness was the most common symptom of which complaint was made. Fifty-eight had attacks of vertigo, 54 became dyspnoeic easily, and 39 had precordial pain. Twenty-nine had hot flushes of the face and hands and also perspired very freely. All these symptoms were aggravated by physical strain and excitement. The symptoms had been noticed in 25 per cent of the men for two or more years, in 64 for one or more years, and in 10 for less than one year. The other 13 men had no knowledge of the onset of the condition. Forty-six men had done hard physical labor previous to entering military service although many of them had been obliged to change to light work. Thirty-six had done light work and 10 sedentary work experiencing no difficulty. In all cases the pulse was very unstable, increasing rapidly with exercise and excitement and ranging from 90 to 150 in a recumbent position before exercise. The thyroid gland was enlarged in every case. Fifty-three men had exophthalmos and the remaining 47 a positive Stellwag, Moebius or Von Graefec sign. All had a fine tremor. In forty-nine cases there was a soft mitral systolic murmur. The systolic blood pressure was usually increased. The diagnosis was based on the tachycardia, thyroid enlargement, fine tremor of the hands, eye signs, increased systolic blood pressure and exophthalmos when present. The history, eye signs and increased systolic blood pressure differentiated toxic goiter from irritable heart in doubtful cases. Many of these men suffered little inconvenience in civil life, the symptoms having been precipitated by the physical and mental strain of military life. It is the prevailing conception that persons with exophthalmic goiter make poor military risks.

HARRY H. REILICH

B m I S c ful Therapy f E ophthalmic Golt r V l M J o g 3 4

The author of the opinion that when surgery appears to be of use of ophthalmic gout the amelioration of the symptoms is due to the surgical agement before and after operation. He is certain that from his experience in which the patients have been apparently entirely cured by medical means.

For him to believe that the individualization of the treatment is important in the treatment of ophthalmic gout. Physical and mental mutilation is the result of the treatment. Therefore, the complete removal of the individual mutilation is sufficient for the harmonious balance.

the individual and his environment. All elements of food must be excluded. The assimilation of a sufficient quantity of food to enable the patient to regain rapidly the weight lost through the course of the disease is the most specific of all measures of the apy.

Although there are no real specifics the hydrobromite of quinin combined with an appropriate hemolytic and a harmless sedative appears to act specifically in this condition all other things being equal.

Such therapy, hydrotherapy and electricity are very useful adjuvants and when properly applied serve to expedite and complete the cure.

CATE OOD

SURGERY OF THE CHEST

CHEST WALL AND BREAST

L m n W S Ch nd ma of th Tho J
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pr l Th p t ent as sent to his home with
i t t ions to tak Coolidge tube treatments The
p b l i l i t y f malignancy even if nconclusive is
v str ng

Funk E H Chyl thorax M d Cl v l o s
8

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pe c nt Co siderale l b n v as p sent

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ph t e v ssel as they p ss through the thorax
The se f chylothorax are either rupture f the
tho ac duct its radi c s o increased pre su e

within the duct which leads to a backward flow of lymph along the pulmonary and pleural cavities.

The clinical manifestations are those of simple serous effusion and the diagnosis is made by the exploring needle. A careful microscopic and chemical examination of the fluid will differentiate it from pus.

The differentiation of true chylothorax from pseudochylosus hydrothorax may at times be difficult. A true chylous fluid tends to accumulate rapidly contains microscopically fine fat globules which stain readily with osmic acid and Sudan III and very few cellular elements. Its specific gravity generally exceeds 1.01. In pseudochylosus effusions the fluid tends to accumulate less rapidly and contains microscopically numerous fine highly refractile granules which do not give the reactions for fat. The specific gravity is usually less than 1.01.

As to the prognosis a perforation of the duct following injury or disease may close spontaneously if the opening is small. Radical treatment by operation upon the duct is not feasible at the present time. When the injury results from operation in the neck the duct may be ligated. The accumulation of chylous fluid in the thorax requires tapping if pressure symptoms are present or when after a moderate wait the effusion shows no evidence of absorption. The fluid should not be entirely removed at one time or the tapping performed too frequently as a certain amount of pressure may be necessary to prevent the escape of more fluid from the duct and to favor repair. Treatment of the underlying condition is indicated. If this is tuberculosis the usual rest in bed with an abundance of fresh air and good nourishing food is essential.

The final result in the case cited is not stated
G. W. HOCHREIN

Paterson R. C. Pleurisy. Experimental and Clinical. *Canad. M. Ass. J.* 1919, 1: 100.

Intrapleural inoculations of tubercle bacilli in tuberculous animals result in an effusion and development of fibrin which does not occur in controls receiving a first infection intrapleurally. This acute pleural reaction tends to localize the infection in the pleura. The effusions may cause tuberculosis in other animals although no bacilli can be found. Permanent fibrous adhesions are formed by the organization of the fibrin.

In the majority of cases pleurisy is tuberculous. It results from acute infection by tubercle bacilli and occurs also in persons already tuberculous. The treatment does not end with the disappearance of the symptoms of the pleurisy but must then be directed to the primary tuberculosis. The effusion is a manifestation of immunity and should not be removed without reason. Aspiration is an operation presenting certain definite dangers which however may be greatly lessened by careful technique.

E. B. FREILICH

Petit R. Sixteen Cases of Pleural Fistula After Purulent Pleurisy Disinfected by the Dakin Method and Secondarily Sutured. (Seize cas de fistules pleurales après pleurésie purulente désinfectées au Dakin et suturées secondairement.) *Bull. et mêm. Soc. de chir. de Par.* 1919, xlv: 77.

Of the 16 pleural fistulae treated by Petit 11 were from 1½ to 3 years old and the others less than 1 year. Several had been previously operated upon more than once.

In treating these cases Petit followed the technique recommended by Tuffier: i.e. stripping up the fistulous tract widely, making a topographic examination of the pleural cavity and its walls, chemically disinfecting with the Dakin fluid, resecting false membranes when necessary and then closing the surgical orifice. In 6 of these cases a sequestrum was found and in 6 others a costal osteitis.

This report demonstrated the frequency of osseous infections after pleurotomy with resection of a rib. Tuffier, who read it, stated that he has observed similar cases and believes that the osteitis is due to loss of periosteum from the rib or infection at the site of section. Also that infection due to the passage of septic matter from the pleura into the bleeding bone surface may cause alterations which end in an osteitis, sequestrae and fistulae.

The frequency of these bone lesions suggests that in cases of pleural fistula the external and internal faces of the sectioned ribs should be carefully examined and if the bone is found to be denuded a fresh resection should be made.

In the 16 cases reported by Petit three new collections, abscesses, etc. after the closure of the pleural cavity necessitated further surgical intervention in 8. In 40 similar cases treated in the same way by Tuffier the wound had to be re-opened for suppuration in 11.

All of the patients made good recoveries.

W. A. BRENNAN

Roux Berger J. L. Treatment of Large Pleural Cavities by Disinfection, Pleurectomy and Pneumopexy. (Le traitement des grandes cavités pleurales par désinfection, pleurectomie, pneumopexie.) *Presse méd. Par.* 1919, x: 1186.

Roux Berger's technique for the treatment of old fistulous infected chest wounds by disinfection of the pleural cavity and decortication of the lung was described last year in the *Lyonchirurgical*. The present article gives an elaboration of the same procedure.

In old infected fistulous cases there are two chief problems: the problem of disinfecting the pleural cavity and the problem of freeing the lung and assuring its functioning. As a preliminary Roux Berger makes a large exploratory thoracotomy, remedies any bone defects and after a thorough radioscopic examination thoroughly cleans out the pleural cavity, exploring every recess and removing all adhesions. When the mechanical disinfection is complete the operation wound is sutured if the conditions

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Lippman C W Common t i n o P t i n f l
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M d o o 9 4

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o t h e r p a t i e n t s h a d u p p e r l o b e l u n g a b s c e s s e s
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e f f o r t f o l l o w i n g w h i c h t h e c l a c l p i c t u r e c h a n g e d
f o r t h e b e t t e r a n d t h e f l u o o c o p e s h o e d a f l u i d
l e e l t h u n t h e l u n g T o o f t h e s e p a t i e n t s w h e n
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TRACHEA AND LUNGS

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T j u o t t h r u t h T h e r l a t i o n o f t h e p u l
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T h e p u l m o n a r y f l l o i n a l l o f t s u b d i v i o n s t h e
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l r a n l f t h e p l m o n a r y r t r y c h e s o v r s c o r r e
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t i f l a l t i n s l g h t l y l t a l t t h e b c h u s T h e
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r l t a e l r u g h t t b y t h e e t r o e t
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I n o l i o n t h f l l o g s m m y g i v e n

B y t h e u s f d f f e t l n j e c t o n m a s s s
t h e p l m o n a r y a r t e r a d e s t h e r e l a t i o n s f
t h e s e t c t u r e s a r p l a l y t l e d b y s t e e r o e t
g e n o g r a m s

F v t l g h t l p u l m o n a r y a r t e s b e i n
j c t e d t h y n b e r e c o g n i z e d i n s t e e r o e n t g n o
g m s a s o m p t e l y d e n s e l i n e a m a k i g s l o g
t h l t e a l v l f t h b r o n c h i U n l e r s i m i l r c o n
d i t o t h e m a i n v u s t n k a n b e m d e o u t o n
t h m e s a l s i d e o f t h s t m b o n c h u s b u t i n i t s
u l t i m a t d t b t i o n i t s b r a n c h e s a e o t a s s o c i a t e d
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3 I n r a d g X r a y p l a t e s c r s h o u l d l e e r
c i s d t o t o n i k e t h l n e a r m k i n f r
d e n s t s p l c e l b y p t h o l s c a l c h e s

4 R n g l i k e s h a l o w s v i t h s h p l o r d r s t h
a p p a r l o n g t h l c h a o f t e n d u c t t h p l a e
t h t h b r o n c h b a t t h o l s e r v e W h e t h e s e
a n g l i k e s h a d o w s a r b r o a d d h a v r e g u l r
h y b o r d e s t l e y a e c t b y b r c h i l c a r
t i l g e

5 This study suggests once more the importance of a knowledge of lung structure in interpreting densities cast on the X-ray plate

ALDOLPH HARTUNG

Packard M Primary Malignant Neoplasms of the Lung and Pleura *N Y St J Med* 1918 VIII 4

Quite a number of cases of pulmonary carcinoma have been reported recently in contrast to former years it having been formerly very difficult to make a clinical diagnosis in the early stages of the condition because of the similarity of its symptoms to those due to many other intrathoracic conditions such as tuberculosis unresolved pneumonia pleurisy with effusion pulmonary abscess and thoracic aneurysm. From a clinical standpoint cancers of the lung may be divided into three main groups

1 Those originating in the pulmonary tissue or more correctly in the alveoli and involving a whole lobe or even the entire lung

Two beginning in the larger bronchi spreading from the root and the hilum to the periphery and involving the adjacent portions of lung tissue. These are more numerous and are very often confused with tumefaction of the mediastinal glands. Besides causing the symptoms of mediastinal pressure they are accompanied by intense pain and embarrassment of respiration

3 Cancer which gives rise to the symptoms of pleurisy with effusion so marked that the underlying cause is obscured

The first group presents a variety of classical physical signs. On light percussion dullness or flatness may be elicited early. On auscultation diminished breath sounds will be noted in contrast to the increased breath sounds of pneumonia and tuberculosis. Aspiration excludes pleurisy with effusion. Increasing dullness in the upper and anterior part of the chest accompanied by diminished breathing suggests cancer this combination being due as a rule to an obstruction of the bronchus by the tumor which causes an added atelectasis of that portion of the lung to which the affected bronchus belongs. De generation of the tumor may form irregular excavations with the signs of cavity and must be differentiated from tuberculosis. A valuable auscultatory sign heard in all cases of pulmonary cancer simulate the sound produced by partial obstruction of the trachea. If the disease has lasted a considerable length of time demonstrable alterations in the thorax may be noted

In cases of the second type of pulmonary cancer involving the root and hilum the symptoms noted are usually due to pressure upon neighboring structures. Closely allied to the symptoms of this type of cancer of the lung are those of thoracic aneurysm aortic aneurysm and enlarged mediastinal glands. Venous obstruction accompanied by dilatation of the veins of the neck thorax upper arms and abdominal walls oedema respiratory obstruction due to narrowing of the air passages intense dyspnoea

especially on exertion difficult de lution because of a sphygmometric pressure symptoms of pressure on the nerves especially the phrenic intercostal vagus recurrent laryngeal and sympathetic nerves and intense pain are diagnostic symptoms. The physical signs are more or less extensive dullness over the lungs with varying auscultatory findings

The third or pleuritic type of cancer is more rapid in its course than the other two and extremely acute. Aspiration never relieves and the fluid which at first is serous rapidly becomes hemorrhagic. Tapping causes no abatement of the dyspnoea ex pectoration and general distress and the dislocated heart never returns to its original position

Case reports illustrating these types of pulmonary cancer are presented and followed by a general discussion

HARRY H. FRILICH

Verbizier A. de and Loiseleur. Pulmonary Gangrene Treated and Cured by Artificial Pneumothorax (Gangrene pulmonaire traitée et guérie par le pneumothorax artificiel) *Bull et m m Soc méd d h p de Pa* XLII 1918 1139

The author treated a case of pulmonary gangrene due to influenza by the method of artificial pneumothorax as recently described by Weil. The cavity resulting from the lesion had been partially drained by the right lower bronchus but this was insufficient and the patient's condition became gradually worse. On radioscopic examination the cavity was found to be situated in the pulmonary parenchyma. An attempt was made to stimulate the insufficient drainage by the installation of positive pressure in the pleura according to Forlani's method for pulmonary tuberculosis. This induction of pneumothorax gave a very satisfactory result by compressing the pocket it rapidly expelled its contents and led to the approximation of the walls and rapid cicatrization

Although this method seems the best in the treatment of pulmonary gangrene its success depends upon certain anatomic conditions which are not always present. It is necessary that the pleura should be free from adhesions that the lung can be compressed and that bronchial drainage of the cavity suffices. It would in fact be dangerous to strongly compress a collection in the lung when its only issue is a bronchus of small caliber

W. A. BRENNAN

HEART AND VASCULAR SYSTEM

Bost T. C. and Neve A. A New Technique of Heart Massage with a Case of Resuscitation *I d i M Ga* 1919 LV 50

The authors divide the routes of approach to the heart for heart massage into three groups

1 The thoracic route in which the costal cartilages are cut through the pericardium being exposed and sometimes opened. Many intercostal vessels and nerves are encountered. Pneumothorax has occurred in several of the cases reported and it is not surprising that there were few successes and that the method has been abandoned

The l l o m l o r s u b i p h a g m a t c r o u t e
 I t h l e d m o n s t e d t h a t i n t h e c o f a c h i d
 h t h o r a x m a l l a n d h o s e t i e l a s t i c
 p n l y t h r u t e p i l l t h o u g h l f i u l t
 t u t n t h l u l t r i v e f f e t i s n l y t h e a p e
 o f t h e t c b h e l a n t h l p a v u p
 a r l H n c t h e d f r t a d p h r a g m a t i c
 u t e t h h t h e l e i t h h e t h e t h
 g n g l a f t h u l o e t l r n r a e s t u t
 H r t m g v o m p l p o r m i n c e I n t s
 l e t t l v t h i t m t m v n d u l t l y t m u
 l t h a l l u t g c t l e q e o f t h e
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 n l p r h a p l t i d l i t t h t i t l e s
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 l f u l t s s s r y H e n t h e a l a n t a g o f t h e
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T h a l d m a l i n o n m a d a h l n g n
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 b e g n n c h t o t h l f t f t l m l n l n
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 p a e b a c k a r d i n a d e e p e r p l a n e t h a n t h i s i o n
 T l l v r a n d s t m c h e n i f p r o m i n n t o f f e r n
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 o t h a t a i r l l n o t b e s u c k e d n n d t h e l u n g v l l n o t
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T h e c n d e s c r i e l l e a s y c l o s e d a n l m d e
 a i r t i g h t T h e s t l m a r g i n i r e t r a c t e d d t h e c u t
 d p h r g m p r s s e l u p o n t i n u o u s c a t g u t s u t u r e
 b e g n s t e d b y m e a n s o f a s t o n g c u r v e d n e e d l e
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 m a k s h y t h m i c p e s u e d u r i n g i n s p i r a t i o n w h c h
 r e l a e d u r i n g e p i r a t t e x p l a n y c o n t a n e d a
 n d p r v a t e n t r a n c e o f m T h e a b d o m l
 n d t h e n l o e d i n t h e u s u a l m a r e r

T h e a t h o s e p t t h e s u c c e s s f l u s e o f t h
 m e t h o l a f t e r t h e h e a t h a d l e e n s t o p p e d f o r t y e n t y
 l e m i n u t e s F r o m t h s c s e t h v c o n c l u d e t h a t t h e
 h u m a n h t a n l e r e s u s c t t e d a f t e r a v a r i a b l e
 p e o d

C l m g e m a y b e u s e d a f t e a c e r t a
 t l f i t m a l l c a s e o f u s p e n l e d h e a r t
 c t n f l l g n a s t h t i c r g l l s o f t h o r e t
 l e t l o g f a c t C s e o f a p h y a s h o l d a l s o
 t l l t h t h i g o u p T h e i n t e r v a l o f t i m e t h a t
 s h o u l d i n t e r e b t o e m s s a g i b e g n p r b a b l y
 a r t h i n d i v i d u a l c a s e T h e o p e r a t i o n s h o u l d
 r a r e l y l d o n b e f o r e f i v e m i n u t e s h e e l s p e d
 u n l e t h e a b d o m n i a l r e d y o p e n a n d s h o u l d
 c r t a n l y l e d n f t e r e a r t h m i n u t e t h o g h
 l n g e i n t e r v a l n l n o t b a r i t s

T h i m p l m e t h o d o f r e s c i t a t n s u c h a s
 a r t h r a l r e p t t o n g u e t c t i o n s h a p p r
 u s i n v e t c d a c r g o n a n d i n e r s i o n s h o u l d
 b e l e g u n m m d t e l y b u t s h o u l d n o t b e e l e s s l y
 p e r d i n t t h i g l e c t o f m o e f f e c t m a s u r e s

S u b l a p h r g m a t m r s a g e m y s u f f i c e s p e a l l y
 c h l l r n a n d f v y p r o m p t l y u n d e r t a k n b u t f
 n l t l e p e v r e h e l n d t h h e a t r e m a i n u
 p e t h d i a p h a g m s h l d b e i c i e d a d t h e
 t l f t h e a r t m a s s a g e t h o u t f u t h r d e l a y

N o g e o n e e n i f r e l t e l v u k l l e d s h o u l d
 a b a n t h i p a t e n t t h o u t g v n h m t h e l e e t t f
 l e c t c d c m s s a g e

T h a u t h o s l m t h a t t h e n e t e c l n i q f l e s
 s p l e a p p r o h a d a d d i c e d m p v e m e t u p o n
 a l l t h e m t h o l f d i r e c t l e a r t n a g i t
 n v o l l r i s k o f h a e m o r r h g e t r u m a n d h o c k
 n d t h e o p e r a t i o n c a n b e m o r e q u i c k l y n d s a t t
 f a t l v c l o s e d L u c i a H L v

I f r R a n m t o f t l H r t b v M s g
 b y t h e T h o c i c R u t (U t h m t d
 p l m p l t h q) B H I
 t S d f d p 9 8 l 9 4

A s o l d a s o p a t e d u p o n f o r m o a l o f a
 p r j e c t l f r o m t l u p p e l o f e f t h l e f t l u n g n

contact with the heart. The spinal cord had been sectioned. After the projectile had been removed the lung sutured and the thorax closed the patient was seized with respiratory and cardiac syncope. There was no pulse the heart ceased to beat. The thorax was reopened about 10 minutes after the heart action had stopped. The heart was seized and massaged by the operator's hands through the pericardium. At the end of 5 minutes of this massage combined with artificial respiration signs of movement within the heart were apparent. The massage and respiration were continued. After a second temporary stoppage complete reanimation and respiration were established. The manipulations lasted nearly half an hour. Half an hour later the patient regained consciousness and spoke. He died the next day, however probably from the spinal and other injuries.

This appears to be the first report of massage of the heart in the course of an abdominal or thoracic operation that has been made during the war.

If the heart stops during an abdominal operation there are two routes of access to it. The simplest route for cardiac massage is by the subphrenic region first used by Lane in 1900. The second route is transdiaphragmatic. Statistics show that the transcostal method in 26 reported cases was successful in 10, momentarily successful in 4 and a failure in 6. The transdiaphragmatic method in 14 cases was momentarily successful in 3 and a failure in 10. Subphrenic massage in 28 cases was successful in 15, temporarily successful in 9 and a failure in 6.

Discussion showed that several surgeons who had attempted cardiac massage found it a failure.

Tuffier thought that the cause of the heart failure—whether traumatism of the heart reflex syncope or chloroform intoxication—should be known in order to determine the method by which reanimation should be tried. The length of time the heart has been stopped is also an important factor. Intraventricular injections seem to be a useful addition to the massage. W. A. BRENNAN

Scalone I. The Operative Indications for Projectile in the Heart (Sull'indicazioni operatorie nei casi di permanenza di proiettili nel cuore). *Polidicti*. Roma 1919. cxxvi sez. chir. 7.

In the case of a soldier with a thoracic wound the X-ray examination showed the presence of a projectile in the heart region. It did not move with the respiratory excursions but synchronously with the heart beats. It appeared to be in the vicinity of the right ventricle or fixed in some part of its wall. The most important movements were those from right to left and from below up. From this fact the author concluded that the projectile was not free in the ventricular cavity but fixed in its wall. Clinical considerations led to the opinion that the projectile had reached the heart directly and that the heart muscle was struck during the phase of ventricular systole.

To show the results of operative intervention in injuries of the heart the author gives the findings in a series of experimental heart lesions made by him in animal. Large strong dogs were used. Linear lesions were made in the cardiac muscle and immediately sutured. Other lesions were made with the thermocautery so as to produce an extensive loss of substance of the cardiac muscle. The wounds were made on the anterior face of the right or left ventricle, some penetrated the ventricular cavity, others were parietal, all were at least 2 cms. in length. In the first experiments some of the animals died during the operation or immediately after it from hæmorrhage which occurred in addition to other cardiac disturbances due to pneumothorax etc. in spite of a very rapid suture. In the case of the parietal wounds a line of loose sutures was first made inside of the proposed area of incision. When the incision was made the sutures were rapidly closed. During and after the closing of the sutures the cardiac disturbances were notably increased, the trauma adding to the effects of pneumothorax, hæmorrhage etc. If the animal survived this phase the operation might be said to be successful even though it did not survive long. The animals generally succumbed to infection at the end of four to five days.

The thermocautery wounds to provoke loss of substance were not penetrating wounds being generally confined to the external strata of the muscle. In these cases also the reaction of the heart was very marked. In one case the animal died on the table when the applications of the cautery were repeated and deep.

The results of these experiments show

1. Infection often arises in the pericardium or pleura or both. In the greater number of dogs dying from infection from the fourth to the sixth day the author found a collection of sero-fibrinous purulent fluid in the pericardium while the edge of the suture was in good condition.

2. When the death of the animal was due to an exudative inflammatory process in the interior of the pericardium the distension of the cavity of the pericardium prevented the formation of adhesions. Where an inflammatory process was present without the formation of fluid adhesions were frequent and thick. In the few cases in which the animal recovered and there were only slight complications due to inflammation no adhesions were formed. The production of adhesions was in direct relation to the complications arising from inflammation during the recovery of the wound.

3. Hæmorrhage through the suture in the ventricular wall was never observed when the myocardium was strong and tightly sutured so as to leave no spaces for infiltration.

The conclusions arrived at by the author from his further studies were as follows

1. A projectile remaining in any part of the heart affects its functioning even if the patient does not feel any disturbance.

and neighboring tissues especially the muscular tissues. The epithelium is derived from the esophageal mucosa. The structure perfectly explains the stenosis and retraction observed.

From the practical viewpoint the conclusion is drawn by the author that extensive esophageal losses can be replaced by free intestinal grafts.

W A BRENNAN

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Berard L and Dunet C. Strangulated Diaphragmatic Hernia Consecutive to War Wounds
(La hernie diaphragmatique étranglée consécutive aux plaies de guerre) *Lyon chirurg* 1918 500

A soldier received a chest wound at the level of the sixth left rib a little outside the mammary line. The wound healed after some months but the general condition remained bad and became progressively worse. While there was deep thoracic pain in the left side and persistent vomiting there was no abdominal meteorism and none of the symptoms pointed to intestinal occlusion. Because of the possibility of diaphragmatic hernia an exploratory supra umbilical laparotomy was done. The stomach and colon were found herniated through the diaphragm. A long horizontal incision was then made traversing the sixth, seventh and eighth intercostal spaces and the sixth rib resected for 10 cms. The left hemithorax seemed filled with the large tuberosity of the stomach and transverse colon. The stomach was in front half twisted on itself and the colon behind. A solid intrapleural stricturing omental band at the diaphragmatic opening prevented reduction and it was necessary to resect it before reduction could be effected. The diaphragm orifice and operative wounds were then closed and the operation ended. The patient who was very cyanotic was revived but the state of shock increased and he died some hours later. The case was one of strangulated diaphragmatic hernia of the greater portion of the stomach and 4 cms of the transverse colon without gangrenous lesions but with very solid omental adhesions.

The authors review also the reports of diaphragmatic hernia published during the war. They believe that in their own case the hernia was progressive and due to injury. Their explanation is that the diaphragm having been torn by a splinter from the sixth rib the opening gradually became larger and the hernia which was progressive and almost without symptoms except nocturnal chest pains until acute occlusion occurred four months after the injury.

Many diaphragmatic herniae have no clinical history and may evolve until the occurrence of strangulation.

The authors believe that prior to strangulation the only symptom it is important to recognize is the painful thoracic tension accompanied by gurgling and accentuated particularly after a meal when the patient is lying down.

When the symptoms point to a hernia especially in a left sided wound probably the best method of determining the condition is a radiologic examination. Operation is generally effective if done early and before strangulation.

In operating a subcostal laparotomy combined with thoracotomy is preferred as neither the thoracic nor abdominal route alone gives sufficient access for the necessary manoeuvres or guard against infection. The laparotomy incision is median vertical and extends from the umbilicus to the xiphoid. The thoracotomy incision runs along the lower edge of the fifth rib the sixth rib being resected. This opening permits the insertion of the entire hand into the thorax. The hernia of the organs is reduced by traction exerted by one hand passed through the abdominal opening the viscera being pushed down by the hand in the thorax.

W A BRENNAN

Hull A J. The Cure of Inguinal Hernia *J R y*
L J M C P Lond 1919 xxvii 15

Hull regards inguinal hernia as a congenital deformity due to the presence of an abnormal process of peritoneum. This defect is combined with a lesser acquired defect namely an abnormally long process of omentum or more rarely mesentery.

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W A L

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PHARYNX AND OESOPHAGUS

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l m o q h

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and neighboring tissues especially the muscular tissues. The epithelium is derived from the oesophageal mucosa. The structure perfectly explains the stenosis and retraction observed.

From the practical viewpoint the conclusion is drawn by the author that extensive oesophageal losses can be replaced by free intestinal grafts.

W A BRENNAN

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Berard L and Dunet C. Strangulated Diaphragmatic Hernia Consecutive to War Wounds (La hernie diaphragmatique étranglée consécutive aux plaies de guerre). *Lyon ch. 17* 1918 vi 509.

A soldier received a chest wound at the level of the sixth left rib a little outside the mammary line. The wound healed after some months but the general condition remained bad and became progressively worse. While there was deep thoracic pain in the left side and persistent vomiting there was no abdominal meteorism and none of the symptoms pointed to intestinal occlusion. Because of the possibility of diaphragmatic hernia an exploratory supra umbilical laparotomy was done. The stomach and colon were found herniated through the diaphragm. A long horizontal incision was then made traversing the sixth seventh and eighth intercostal spaces and the sixth rib resected for 10 cms. The left hemithorax seemed filled with the large tuberosity of the stomach and transverse colon. The stomach was in front half twisted on itself and the colon behind. A solid intrapleural stricturing omental band at the diaphragmatic opening prevented reduction and it was necessary to resect it before reduction could be effected. The diaphragm orifice and operative wounds were then closed and the operation ended. The patient who was very cyanotic was revived but the state of shock increased and he died some hours later. The case was one of strangulated diaphragmatic hernia of the greater portion of the stomach and 42 cms of the transverse colon without gangrenous lesions but with very solid omental adhesions.

The authors review also the reports of diaphragmatic hernia published during the war. They believe that in their own case the hernia was progressive and due to injury. Their explanation is that the diaphragm having been torn by a splinter from the sixth rib the opening gradually became larger and the hernia which was progressive and almost without symptoms except nocturnal chest pains until acute occlusion occurred four months after the injury.

Many diaphragmatic herniae have no clinical history and may evolve until the occurrence of strangulation.

The authors believe that prior to strangulation the only symptom it is important to recognize is the painful thoracic tension accompanied by gurgling and accentuated particularly after a meal when the patient is lying down.

When the symptoms point to a hernia especially in a left sided wound probably the best method of determining the condition is a radiologic examination. Operation is generally effective if done early and before strangulation.

In operating a subcostal laparotomy combined with thoracotomy is preferred as neither the thoracic nor abdominal route alone gives sufficient access for the necessary manoeuvres or guards against infection. The laparotomy incision is median vertical and extends from the umbilicus to the xiphoid. The thoracotomy incision runs along the lower edge of the fifth rib the sixth rib being resected. This opening permits the insertion of the entire hand into the thorax. The hernia of the organs is reduced by traction exerted by one hand passed through the abdominal opening the viscera being pushed down by the hand in the thorax.

W A BRENNAN

Hull A J. The Cure of Inguinal Hernia. *J. Roy. Soc. Med.* 1919 xxii 152.

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GASTRO INTESTINAL TRACT

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Steward F J The Surgery of Gastric Ulcer
Clinical Lecture *Guy's Hosp Ga* 1919 v 11
36

A large proportion of gastric ulcers heal after medical treatment but perforation with resulting acute abdomen is possible. The ulcer may bleed either suddenly in large amounts or continuously, in slight amount. Cicatricial contracture with pyloric obstruction or hour glass stomach may result from a healed ulcer. Malignancy also may ensue but in duodenal ulcer is uncommon.

Many gastric ulcers cause no symptoms as is proved by the unexpected finding of healed ulcer postmortem and by the fact that perforation may be the initial symptom. A second group are atypical causing confusion with gall stones, chronic appendicitis or adhesions. In the third group are found ulcers causing typical symptoms.

1 Pain which is a rule is intermittent epigastric and occurs after the ingestion of food.

Vomiting which occurs at the time of pain and usually affords temporary relief.

3 Local tenderness which is fairly constant in the epigastric region and varies a great deal in different patients and at different times.

4 A hypertonic condition with hurried emptying shown by the X ray examination except in cases of pyloric obstruction or hour glass cicatrix when the reverse is the case. The site of the ulcer may be outlined.

Surgical treatment of gastric ulcer includes first uncomplicated cases that have not yielded to medical treatment and second cases complicated by (1) Perforation (2) hæmorrhage and (3) pyloric obstruction or hour glass contracture.

In cases of the first class gastrojejunostomy gives the highest percentage of cure. Cautey, pylorotomy or partial gastrectomy for patients already reduced causes a marked rise in the mortality.

Jejunostomy has the advantage over gastrojejunostomy in that it gives complete gastric rest. In cases reported by the author however definite gain in weight was apparent only after food was given again by mouth.

Bleeding from an ulcer with definite history is an indication for temporary medical treatment followed by operative treatment unless secondary anemia is so marked that waiting is necessary.

The most striking results from gastrojejunostomy as to definite improvement in the general condition and low mortality are obtained in cases of contraction following ulcer.

Carnot Froussard and De Martel Fécaloid Vomiting Due to Jejuno-colic Fistula from Peptic Ulcer in an Old Case of Gastro Enterostomy (Vomissements fécaloïdes par fistule jéjuno colique après ulcère peptique chez un ancien gastro entérostomisé) *Bull et m Soc m d d l p d Ia* 1918 xli 1173

The authors recently treated for fécaloid vomiting a patient in whom a gastro enterostomy had been

done two years before. The clinical examinations and the subsequent operation showed the presence of a jejuno-colic fistula contiguous to the orifice of the gastro enterostomy and due to a jejunal peptic ulcer which had developed after the gastro enterostomy.

As at the second operation no vestige of the first ulcer was found it seems possible that in cases of gastro enterostomy a jejunal ulcer can develop in the absence of a first ulcer.

The second operation showed also that the greater curvature of the stomach was united to the posterior border of the transverse colon near its meso insertion and to the small intestine by extensive adhesions.

The fécaloid vomiting was easily explained by the presence of a communication between the colon and the stomach. It was favored by diarrhoea and clinically was observed only during periods of diarrhoea.

When an abnormal communication between the stomach and colon is demonstrated by any test method it must be decided whether the fistula is direct (gastro colic) or indirect (gastro jejuno colic). The non contiguity of the stomach and colon and their reciprocal mobility are in favor of indirect communication. The interposition between the stomach and colon of a small pocket which in the radioscopic examination was dark when filled with a barium test meal showed in the author's case that the communication was first between the colon and jejunum and then from the jejunum to the stomach also that the jejuno-colic fistula was of secondary origin and near the orifice of the anastomosis. The filling of the jejunum and of the rest of the small intestine after a barium meal also indicated that the communication between the stomach and colon was not direct.

As regards the surgical treatment resection of all the fistulous segments is evidently the best method of obtaining a return to normal conditions.

The development of secondary peptic ulcers shows how necessary it is not to leave gastro enterostomy patients without medical supervision. Because of the effects of the hydrochloric peptic juices which are abnormally directed into the jejunum such patients should be supervised and confined to a special diet.

W A BERNARD

Head G D Primary Carcinoma of the Third Portion of the Duodenum *J M Sc* 1919 cl 1 82

Primary carcinoma of the duodenum comprises only about 2 per cent of the cases of malignant disease of the intestine. It may occur in any part of the duodenum although Fenwick found in his case that the third part was involved in only 13.5 per cent.

The case reported in this article was a primary adenocarcinoma involving the third portion of the duodenum below the biliary papilla and encircling the bowel wall. The symptoms were largely those observed by Fenwick, namely flatulence and discomfort after meal, burning and eructations, loss of appetite, gradual emaciation and finally vomit.

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 f the sam v r th mting spell as e pe
 r el h n th t 2 green n lo and
 nta n l bl k p a tally d ge tel l d
 l t Th l i ha ugg t d cer of the
 t mach l t t th thr v mptom I the
 ph l t on th g of mp rtance a
 nt l t t th nam l r a v l c brut
 at the p l m h t emphy m t s h t
 Tl t l l t dcl th g s l ut
 m s l l l p l p t l th m l m te al
 m d a t bl d hrem gl b n 4 p c e t
 r l ell 3 uoo o l h u acid l on
 ta l m l l m The t l sho l bl od
 O J th p t t s l l to ret l d
 fo d l ther n th g t sugg t m l g n nt
 ds O J l a e t t a e r s l t l eep
 th l l d n c On O t l r h t m e
 p le l c m pl l f p in th l ght
 bd n l ut n t l l b p l p t l The
 st l ere l k b n A l loo l e am t on
 sh ed m kel drop S l e qu tly th t o l
 b e light r a d gre n h c o l O Oct ber
 o the p t ient c m pl n d f v l l e l d t e s s
 in th blomen F l lo g t h s n d i t n as
 much mp v d u t l J n v s hen h began
 omit ng coffe g and acid m t e r i a l h c h
 continued t i n t e a l s u n t l d a t h e s u l t d o n
 Jan ary 9

At aut psy tumo ma s as f und n the th l
 po t of the duodenum and n the lo e part f
 th des ending po tion The lumen of the bo el
 as almost completely cut f l v n ca u f l e r l k e
 g o w h o w i n g f m u s median nd poste all
 M c o s c o p e a m t o n of the tum r showed it
 to be a t y p l l n o c i n o m of the p l l a r y t y p e
 I P H x

Udaond C B Th P ncreat c Reflu in th
 Di gno i f D d nal Ulcerati ns (l fl
 l l o p e t q d l d g t q d l e
 t d d d e m) l h d l d i p p e
 g P 99 38

Th r s much difficulty in the l i f e e n t i a l l g
 n s b e t e u l c r of th t m h and ulcer of the
 duodenum e p e c i a l l y h e n the ulc e s a r s t u a t e i
 in the ne ghbor h d of the pyl us The author s
 reser h v s b r d on the lat e const ncy th
 h c h the e s u of duod n l s e t i o n to the
 stomach h o w s the p e s e n c e of t r y p t i c f e m e n t

The rel t n e i s t i n g b e t w e e n the s e c r e t o r y a n
 m a l y and the l o c a l a n d o n of ulcer has b e e n i n v e s
 t i g a t e d b y o t h r b u t i n s u f f c i e n t l y and with r e s u l t s
 h h c a n n o t b e a c c e p t e d w i t h o u t r e s e r v e U d a o n
 d o h a s p r o v o k e d the s e c t i o n and r e f l u of the
 p a n c r e a t i c j u c e s b y the m e t h o d of V o l h a r d and
 d e t e r m i n e d the p r e s e n c e of the t r y p t i c f e r m e n t
 b y the m e t h o d of C r o s s H e f i n d s

That ulcer t s of the first portion of the
 duo l e n u m g e t h the V o l h a r d m e t h o d a r e f l u x
 of the l d e a l c o n t e n t s a n d a p o s i t i v e f i n d i n g
 f t r y p n n 8 r 8 0 p e r c e n t of the c e

U l c e a t i o n s of the s e c o n d p o r t i o n of the duo
 d e n u m g i v e s u 8 7 p e r c e n t and a p o s i t i v e
 t r y p s i n f i n i n g i n 5 p e r c e n t of the c a s e s

G a s t r i c u l c e r s n r the p y l o u p e r m i t a d
 d e a l e s u n l y e x c e p t i o n a l l y (8 3 p e r c e n t)

4 L e s o n l a n t a n t from the s p h i n c t e r g e a
 p o s i t i v e c t v i n 3 3 3 p e r c e n t of the c a s e s

W h e v f n o t i s the f a c t t h a t i n c a s e s of u l c e r
 in the s e c o n d p o r t i o n of the d u o d e n u m t h e r e i s a
 m a k e d d i m i n u t n f a c t i v e t r y p s i n e w i t h o u t
 the e i d n c e of p a n c r e a t i c s u f f i c i e n c y i n the d i
 g e s t i f u n t s W A B

S y m m D a n d G n b e g M Th Cl cal
 S g n i f i c a n c e of L y m p h o i d H y p r l i of the
 A p p n d i J l M l 9 9 l 4 6 8

I the m u r c p c e x a m i n a t i o n f s e r a l
 t h l a p p n d e s r m o v e d t B l l e v e H p t a l
 e e l y m p h d h y p r l a s f o u n d to be the
 l e o r p r l m n t c h r g e i n a b o u t 1 0 p e r c e n t
 Th e a p p d e c h a l b e e n r e m o v e d b e c a s e o f
 l i n i t m p t m s of a p p e d e a l d i s t u r b a n c e s f a
 u b r i c a t c h n n t A c o r r e l a t i o n of the
 l i n i c a l l l t l o g d t a i n a s e r i e s of t e t y
 a s - t l o t h e r l e g m n o t o u s l y s i m i l a - o n
 l u v l y p o e d t h t the c o n c l u s i o n c o n s t i t u e s a
 v a r i o u s f r a c t i l i m p o r t a n c e i n the e n t v
 a c e s l e t h e c n c e n c e a s e q u a l a l t h e
 a g e v a r i f o m t 3 0 y e a r The n u m b e r of
 a p p e n d i l a t t a c k s g e d f r o m t w o t o e i g h t
 The l e u c y t e c o u n t s o r m a l i n a l l c a s e s and the
 l i f e r a l c o u n t d l s c l n o a n o r m l i a t i o s
 The o n s t of the a t t c k s a s c h a r a c t e d b y
 c m p l i k p a n o r p a n d m o d e r a t e t e d r n e s i n
 M c B u r y s e g i o n l a s t g f o r s e r a l h o u s o r
 l a y s d i t h s l h t o r n c o m p y g m u s u l
 r i g i d t y N a u c a s n t u n o m m o b u t v i t i g
 a s r a r e A n o m a l t e m p e r a t u r e p u l e r t of 8 0
 t 0 0 h a l a c h e r n d c o n s t p a t o n c o m p l e t e d the
 p e t u e The t r a c k s e c u r r e d a t i n t e r v a l s of w e e k s o
 m o n t h s M c s c o p c a d m a c r o s c o p c e a m a t i o s
 s h o d n o i n f l m m a t o r y h c H y p e r p l a s of the
 l y m p h a t c e l m e n t s a s s o t e d t h the p e n c of
 n c t c o d e g e t i v e l o n s i n the g e r m a l
 v e n s o c c u r r e d i n l l and i n the o l l r p t i e t s
 m r k l e n n t i v e t e p l c e m e t of the m u c o s a
 s e e n

Th a p p e d e a l l e s i o n the a u t h s b e l e v e i s
 u n d o u t e l l y n a n d c a t n of s t a t l y m p h a t c u s
 the s t i g m a f h u c h a u u a l l y f o n d to be

present when carefully looked for. The clinical significance of status lymphaticus is emphasized by the observation that as excessive lymphoid hyperplasia of the appendix with degenerative or necrotic lesions in the germinal areas occurs so often in children or young adults with a history of mild and repeated attacks referable to the region of the appendix a routine inspection of such persons for the physical attributes of status lymphaticus is desirable. This is important in view of the possibility of sudden death under anesthesia for operation and in infection. In such cases the clinical indications for operation are not imperative as the changes do not tend in the direction of perforation but toward fibrosis.

HARRI H. IRELLICH

Horsley J. S. Resection of the Cecum and Ascending Colon. *Am. Surg. Phila.* 1919 lxv 5

Lateral anastomosis is being abandoned in favor of end to end anastomosis because in the latter there is less interference with peristalsis, the opening is less likely to contract and less bowel and suturing are required.

The chief objection to lateral anastomosis is leakage at the mesenteric border. By dividing, clamping and tying this mesenteric triangle prior to division of the bowel infection and subsequent loosening of the suture line is completely avoided. The steps of the operation are:

1. A thorough mobilization of the cecum is effected, colon and the lower part of the ileum by dividing the peritoneum to the outer side of the mesentery of the cecum and ascending colon.

Division of the mesentery which supplies the segment of bowel to be removed care being taken to keep as close to the bowel as the indication for the operation permits. The triangular surface at the mesenteric border of the bowel is clamped and tied as are also all mesenteric vessels.

2. The bowel which is to be resected is picked off by gauze wrung out of hot saline solution. Wet gauze should be carried under the loop as well as around the ends where the section is to be made. The diseased segment is then clamped as close as possible to the point where it is to be cut and intestinal clamps are placed at a sufficient distance from this point on healthy bowel so as not to interfere with the suturing.

3. The bowel is divided with the scissors, the cut being made somewhat obliquely so that better nutrition may be obtained and slanting from the mesenteric border outward.

4. The edges of the mucosa of the healthy end of the bowel are caught at three or four places with small forceps. The end of the bowel from the clamp to the cut surface is thoroughly cleaned with gauze sponges dipped in bichlorid solution. After all fecal matter has been removed the excess of bichlorid is mopped out and the end of the bowel covered with a gauze pad wet with saline solution. The other end of the diseased loop of bowel is then cut off and treated in a similar manner.

5. The suturing is done with a straight needle and linen thread and is begun on the mucosa of the colon. The needle is carried through the colon to the ileum. It pierces the ileum about an inch from its end from without inward and returns in a reverse direction through the ileum and colon making a mattress stitch. The short end of the thread is clamped with a hemostat.

6. The suture is continued by carrying it back and forth after the manner of a continuous mattress stitch, taking in more of the colon with each bite of the stitch and keeping an inch behind the end of the ileum.

7. After the mesenteric border has been passed the stitch is brought onto the surface by thrusting the needle through the colon. It is then continued as a right angle stitch penetrating all coats of the intestine uniting the edge of the colon to the ileum an inch from its end and taking more of the colon than the ileum in each bite. About every third stitch a back stitch is taken to prevent drawing the suture too tight. When the suturing has reached the point where it began it is carried on the ileum one stitch beyond the short end of the thread which was left clamped and then tied to the short end. The knot is tied in the line of the incision so it will sink well into the bowel. The thread is tied three times and cut short.

8. A row of interrupted mattress stitches of fine tanned catgut is placed around the whole line of sutures. This is done to promote the valve formation and to make the point of union more safe. The mesentery is sutured together loosely and if possible a nearby piece of omentum is fastened over the line of union. In resection of the colon the same technique can be used, the valve construction feature of course being omitted.

Gas distention is a frequent annoyance after operation. On the left side a rectal tube may be used but on the right a soft rubber catheter in an enterostomy opening (made according to Coffey's method to form a valve of the mucosa) will give much relief and add little to the length or risk of the operation.

LISTER TUHOLSKE

Hunt V. C. Torsion of Appendices Epiploicae. *Am. Surg. Phila.* 1919 lxv 3

The pathologic changes incident to appendices epiploicae are usually those attending mechanical interference with their blood supply either by torsion or direct pressure. A considerable number of cases have been reported in which torsion of an appendix epiploica has occurred in a hernial sac, this being the most common site for mechanical interference by direct pressure and strangulation without torsion. Fat necrosis is the chief degenerative change.

Since all cases of torsion of an appendix epiploica present acute pathologic processes infection of an appendix epiploica by direct microbial invasion from the lumen of the bowel seems a very probable etiologic factor.

ng and c che a The lo els re c stipated
 and the st ls contind bile and lten bil d
 The vomituo can d b le l t c e d nd p
 c extu ju e The t macl is mu h l ged
 and fill d ith bil l fl The p t n t 4 year
 f r e h l l n ell d stro g hen ng tut
 fr th past eght v sh d c mpla nd f d t
 n the ppr l do e and b k I N n b r
 16 len he l m pal d eak a di g si
 a m de t p n c u amu Th blo d
 m t n ho el ord li and h m
 gl b n j cr nt (t sympt ms th m t
 in of a lark l n n te al flo e l In Ju e
 f the am v noth mit pill a pe
 ned h n th n t as green n color and
 t el m lla k part ll d gest d ll od
 l t This ill h ugg t l c r f
 st m l l u t the th svmt s I th
 ph c l at n oth g f mpr n
 tot ed v pt th u r v t l l t
 at the y l ome h t emph m t h t
 Th st n h a l t del th k l u t n
 n s c h l l j l t l l h om ted i te al
 l in e t l l l h an g bin 45 p nt
 r l l l j Th u n s d and
 t l m lbum n The sto l sh j blo d
 On J e tle p t a as l l e t a s l d
 d of al th s n th k t suggest m lgn t
 d O July a tnt a a f l d f
 in th md bl m n O t l h m
 f l l m pl el i f i the l e ght
 al m t t n a u l l e j l l a l Th
 sto l r dr k b o n A bl od in ton
 sh d r m k l d p Sul se j u ntly th st l
 became light and g n h n l On Oct l r
 th p t nt ompland f n ll d e d l t
 n th b d omen Follo ng th s h nd t ion a
 mu h m p oved unt l J n u r s hen h l an
 v m t ing a f f e k und d m te l h ch
 co t nued at terv ls unt l death cul ted on
 Ja y o

At utopsy a tumor ma as f und n the th l
 p r t n f the du denum and n the lowe part f
 the des e d g po t on The lumen of the bo l
 s al m t compl t l v cut off by cauliflo e l k
 growth in f om t s media and po t e r l l
 M scopi m n t ion of the tumor sho e l t
 t b t y p l ad cnoma of the pap llary t y p e
 F P H M

Ud nd C B Th P ncre tl R flu i th
 Di gn is f Du d n l U l c r t i n f l fl
 l l p t d d m l l ag t q d l e
 t d d d m l l d i d l p p d
 g t P o o 38

Th e s much d ficulty in the differe n l l g
 n s b t e u l e f th tom h d u l c of the
 du len m pe llv l n the l e a e t u t e l
 n the ne gh b ho l of th pvl u The author
 rese ch s b s d n the relat e o s t c v th
 h i h th efflux of duodenal se et i s n to th
 stoma h sh s the p e c e of t y p t c f e m e t

Th relation exst ng bet een this secretory an
 mal and the l cal i at ion of ulcer has been inves
 t gate l b y ther but i suff c i ntly and with results
 h h cannot be accepted without rese v Udaon
 do h s p oved the secretion and reflux of the
 pancatic j u c e s by the metho l of Volhard and
 dete m n d the jrese c e of the tryptic ferment
 by the meth d of Goss He finds

That ulcerations of the fi st po t ion of the
 duod num g e ith the Volhard method a reflux
 of th duod al co tents and a p s i t e find g
 f trypsin 81 8 per cent of the case

U l e a t i n of the second portion of the d o
 denum g e r efflux in 87 5 per cent and a posit ve
 trypsin t n l g m 5 per cent of the ases

G r t u l c e e a r th pylorus p rmit a luo
 d a l r l only e cepti nally (8 3 pe cent)

4 Le l t a n t f m the sph cter g ve a
 p l t v e c t n in 33 3 p r cent of the cases

W th of not i the fact that i cases f ulcer
 n the s l p o r t n of the d denum there i
 m k l d m n u t of active tryps without
 the e l c of pancreatic insufficiency in the d
 gesti f t ions W A Br

Symm D and G e n b g M The Cl lcal
 Significan of Lymph d l y p l a s t f th
 App ndi J l M l 9 o l 468

In the m r opic exami at ion of se e al
 th l r p l n d e c r m v d t Bell vue Hosp tal
 v l v ph d hype pla a as fo nd t be the
 l r p l m nt ch r n about o per cent
 Th ppend es h l been removed becau e of
 l t te svmt s f p p e l c eal d t r b n c e s of
 l u t e o h n c a t u e A co el t n of the
 l l l h stol c l a t a n s e i e of t e n t y
 th oth s b e n m n o t o n o l y s m l a c
 l l y p r e l t t the cond t co stitut s
 v n l r n of pra t i al importance In the tw tv
 e s l n the e m d e n c e e q u l a d t h
 g s v e d f o m to 30 v a The numbe of
 append e r l t r a k s r a g e l f m t o to e ght
 The l u c v t e count a o r m al all c e a d i e
 l f i e n t l count d c l o e l n o a b n o l a t i o n s
 The on t o of the att a k s a ch c t e d b y
 c a m p l e p n o r pain d m o d e r t e d e r n e s s
 M c B u r n s e g o n l a s t g f o r s e r al hours r
 l v and i t h s l i g h t o r no a c c o m p a y n g m u s l a r
 g i d t v Nausea s n t u n c o m m o n b u t v o m i t n g
 a s r e A n m al t e m p e r a t u r e a p u l e r a t e of 80
 to 90 he l a c h e and c o n s t a p a t i o n c o m p l e t e d the
 p u r Th e a t c k r e c u r r l a t i n t e a l f e k s o r
 m o t h s M e o c p i c n l m a s c p e e m n a t n s
 sh o e d o i n f l a m m a t o y c h a n g e H y p p l a s t i e
 l v m p l c a t e m e n t s a t d v t h a p r e s e c f
 e c r o t c d e g e n e r a t i v l e s i o n s i n the g e m u n a l
 a c a s o c u r r e l i n l l and n the o l d e r p a t i e t s
 m a k d c o n c t v e t s s u r p l c e m e n t f t h e m o s
 a s n

This p p e d c e a l l n the authors b l i e s
 i n d o u b t l l v a n d c a t o n of t t l y m p h t c u s
 the t g m t a f v h c h a r e u a l l y f o u n d t o b e

present when carefully looked for. The clinical significance of status lymphaticus is emphasized by the observation that as excessive lymphoid hyperplasia of the appendix with degenerative or necrotic lesions in the germinal areas occurs so often in children or young adults with a history of mild and repeated attacks referable to the region of the appendix a routine inspection of such persons for the physical attributes of status lymphaticus is desirable. This is important in view of the possibility of sudden death under anesthesia for operation and infection. In such cases the clinical indications for operation are not imperative as the changes do not tend in the direction of perforation but toward fibrosis.

HARRY H. FELLICH

Horsley J. S. Resection of the Cæcum and Ascending Colon. *Ann Surg Phila* 1919 1: 25

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- 6 The suturing is done with a straight needle and linen thread and is begun on the mucosa of the colon. The needle is carried through the colon to the ileum. It pierces the ileum about an inch from its end from without inward and returns in a reverse direction through the ileum and colon making a mattress stitch. The short end of the thread is clamped with a hemostat.

- 7 The suture is continued by carrying it back and forth after the manner of a continuous mattress stitch taking in more of the colon with each bite of the stitch and keeping an inch behind the end of the ileum.

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LISTER TUHOLSKÆ

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Intra bdominal tor of an appe li p plo
ica m suddenly dep et of it c ulation ith
u h apid necr s of it n pelicel that it
dr ps if as a fee b ly

The literatu e contains reco d f 4 c es unde
the title of t son and nil mmati n f append ces
p plo cae N teen v e e s f t u e tors on
n o of h h it occurred tra bd min lly and
n o o th n he n al cs In the case f ntr
bd min l to ion the s mptom ere t l s f
c te sug c l ddom al c l tions s mul t ag
cute append c t gall stone dis ise int st nal
l struct ic Ph p tents n hon tr
hernial t on c rel p e s e t symptoms f
trangu l t on r c r t i of th he n al c t nts

Th re r l in the lit tr cas of
h rn hi h the v mpt ms e e acute n l f m
t th est ult i in r e c u r r e d p n i c
eppl c e e f u n l s s e s of f c i g h t o d
n the pe it n e l v t h c h r e u l t o have
t n the ults f t s n f append c p l i e

T th c c e p t e l n the lit tr th utho
v h e to ad f r v h c h h a v l e n u n d r e s
at i the Ma o c l i n the p r t t e v s

S n p r e t t u e t o s o n f a n a p p e n d e p i l c a
d b t u l t o i n r e c r t i o n i n g n a l
h n s a l a f o e n b d n th p e r t l
t v l f f h a s f t o p r e n t d c u t e

v m p t m s f h h o p t n a d e f n
th th s s the t on as p r b a l l y v m p
t o m l s a s t u s f u n l t o u r of o r a t i o n s
i r o t h p a t o l o g n l u n Th a s s n h c h
there n c t o n a h r n l s a c p n t e l
s y m p t m s of c a e a t n o f t h a l t t

The f o e k b o l y s f l n t h c u f a n
p e a t f r p t o p e a t e h r n a

In th o n b d e r i f s e s (4) i n h h
m e h a n a l t e f c e t h t b l o s u p p l y
t p p a d e p l c r h l o c u r r e d t h o r i g n
of the p p n l n t h g m d n i n t a c e s
i n t l e c a m n o n t h t r r e c o l i n n l
n t s t a t e l s

The a m t f t r of p p d c e s e p l c e
h a s v c l f m e t u t h u g h s o d e e s t
t e n h a l t u n

In 24 of th 6 case of t s i o n i n h i h t h a g e
of the p t e n t g v e n the y o u n g e s t p t i e n t a s o
a n d the o l d e s t y e a r a n v e a g e f 45 y e a s

I n t a b d m i n a l t o n o c r r l t m e s n t h e
m l e a d 5 t m e s t h f e m l e W t h i n r h e n a l s
t o r d 6 t m e i n the m a l e a d 4 t m e
i n t h f m a l e 6 5 p e c e n t of the e n t e s e s of t o r o n
o c c u r i n g t h m l e

LIVER PANCREAS AND SPLEEN

C s e J T V l i of R a d I g E x m i n t i o n i n
B i l a r y L i t h i s (D l l l l l m
d l g q d l l t h b l l l) B l l l
m e 5 t d d l d p d P 9 8 l 83

F o m the r a d i o l o g y p o n t of s e v the r u t h r
d v i d e c a s e s of b i l a r y l i t h a s i s n t o t h e c l a s s e

1 Those n which the biliary calculi are entirely
or almost entirely composed of pure cholesterol
and consequently except in rare cases are av sible
to the X ray

Cas n hich the proportion of calcium is so
considerable that it is also t impossible not to see
the al l l u r i n g e v e n a c u r s o r y e x a m a t i o n

3 Cas s n hich the calcareous co tent of the
c l h i s i s o l t h e t o e s c a n l e r e d e r e d v i s i b l e
l y l m s of v e r y p r e c i s e t e c h n i q u e This is
the c l h b a d i o g r a p h y m u s t b e p e r f e c t b e
c a u s e c c o f a i l u r e d e p e n l s u p o n the r a d i o l o g i c
l i g n s s

B l a r l u l y h e p r e n t c a n b e r a d g r a p h i
l l l m t r t e d n a l u t o p e r c e n t of the c a s e s
f l h b n h o v n t h e r u t h r n p r a c
t c l i t t h e p r e n t t i m e h e a s f o u n d c a l c u l i
a d l g a l l y m o r e t h a n o o c a s e s I n the l a s t
300 s f l a p a r t o m y t t h e B a t t l e C r e e k S a n a
t r m i n h c h the g a l l b l a d d e r s e a m i n e d a f t e r
r a d i o l o g y e x m i n t i o n of the e i o n of the g a l l
t h a l l m a l l f r e p e a t i o n b i l a r y c l c l i w e r e
f u n d 4 l t h e a p o s t e r a d i o l o g i c f i n d i n g
h a l b e m d i n o 40 p c e n t

I n d i t t o l e c u l u the X r y e a m i n a t i o n
n m e e s m a y s h o t h e r p a t h l i c o n d t i o n s
i n the g a l l b l a d d e r g s u c h a s f i c a d h e s i o n
t c v l c o n f the g a l l b l a d d e r i l l b e r a d i o l o g i
l l y l c l i s o i e c e n t f l l c a s e s

W A B

H l b o k J S S l i g h t S y m p t m i n C a l l B l a d d
D i e i t l M k d G I t h o l o g i c a l L
o n M M d o 9 5

A g e t v a e t y f p a t h l o g i c c o n d t i o n s of the
g l l b l d l r m a y e i s t i t h o u t p r d u c i n g m u c h
d t r s The f o l l o i n g h v e c o m u d e r the a u t h o s
b s r a t i o n (1) A l a r g e s l i t t a r y s t o n e (2) a p u t t y
l i k e m o u l d o n t i n g s o f t s t n e (3) n u m e r o s
s m a l l s m o t h a l o u g h s t o s a n d (4) c a r c i n m a

I h m o t c o n s t a n t s y m p t o m p r e n t i n the e
s h b e e n d i s t r i e i n t h e s t o m a c h a s s o i

t e l t h g s f o m a t t A t t a c k s of c o l c a r e d e
p e n i e n t u p s m e c o l i t i o n n the g a l l b l d d e r
h i c h p l e s p e s u e a n d u n t i l t h p e s u e
i e s t a b l i s h e d a n y k i n d f s t o n e m a y b e p r e s e t
f o r v e a s o r v c n l i t o n m a y c i t v i t h u t p
l u c g y m p t m s P W S e r

B o w n R O A S t u d y o n t h f t l i g y of C h o l
y t i t i n d i t P r d t i n b v t l i n j t i o n of
S t e p t o c c i l l l l l M d 9 9 85

The o k e p o t e l i s m a l a r t o t h a t d o e b y
R o s o v i n 914 e c e p t t h t l l g a l l b l d l e s
r e m o v e l t o p r t i o n t h M a y o C l i n c r e a d l e s s
of the d e c r e e of p a t h o l o g c h a g e v e r e c u l t r d

The t i s s u e s e c u l t u c l a s s s o o n s p s s i b l e
f t t h r m a l e r y e f f o t b e i g m a l e t o p e
v n t n a t i o n i m m d i t e l y b e f o r e e m u l
f y g the t i s s u e s r e t h o r o u g h l y v a s h e d i n l a r g e
l u m of p h y s l o g i c s l u m c h l d s l u t o n
T h e y e t h e n g o u n d n m o t a s t h s t e r l e

air chambers or in a hood the air of which was washed by means of steam from a sterilizer fastened to the end of the hood. The operator wore gloves and sleeves which with the materials used were sterilized in the sterilizers opening into the hood. The emulsions thus made were inoculated in varying concentrations into tall columns of dextrose brainbroth blood broth litmus milk ascites dextrose broth ascites dextrose agar and dextrose agar. Krumwiede plates of dextrose blood agar and plain blood agar plates were poured also. The cultures were studied at the end of twenty four hours but those that were negative were examined daily for a week.

Altogether cultures were made from 10 gall bladders and 4 ulcers. At first cultures were also made from the contents of the gall bladders but because of the large number of negative results regardless of the findings in tissues this was abandoned.

The duration of the symptoms in the cases studied ranged from three months to thirty years. The pathologic changes ranged from slight to marked thickening of the walls.

In the gall bladders showing slight changes only 30 per cent yielded streptococci in contrast to 75 per cent of those showing marked changes. More over the gall bladders in which there were marked changes showed the larger number of colonies. Some of these contained countless numbers of organisms while those showing slight changes with few exceptions contained a small number. Of the latter 58 per cent gave no growth while only 5 per cent of those showing marked changes gave no growth. In the cases showing slight changes colon bacilli were isolated in pure culture from 1 per cent and in combination with streptococci from 6 per cent. The entire 15 per cent of those with marked changes contained both colon bacilli and streptococci.

Some of the organisms when first isolated produced opaque indifferent colonies on blood agar and microscopically were grouped in diplococcus forms with little or no chain formation. Further study however proved them to be streptococci. In this connection an interesting observation was made. From one of these cases showing a pure culture of opaque gray staphylococcus like colonies two strains derived from a single colony were studied. The one kept on blood agar alternately aerobically and anaerobically became a green producing streptococcus. The other planted alternately in dextrose brain broth and on aerobic and anaerobic blood agar slants became hemolytic.

The different strains varied somewhat in their fermentative powers. Of the 18 studied all fermented dextrose lactose and maltose 3 raffinose 4 mannite 10 salicin and 1 mulin. One strain after a single animal passage had its fermentative powers changed but it was still agglutinated like the original strain.

Microscopic examination of the gall bladders failed to reveal bacteria when negative cultures

were obtained but bacteria were found consistently when the cultures were positive. Organisms were found in the lesions produced in rabbits but were not found in normal tissue. At the suggestion of Dr. L. S. Judd microscopic examinations of liver sections which he removed were made in 10 cases. Interlobular cirrhosis was found in 6, no change in 2 and a bile duct involvement in 2. The livers which were normal and those showing fibrotic changes were found in cases in which the gall bladders showed marked and slight changes while in those showing cholangitis there was little or no change.

Friedman L. J. Roentgenological Diagnosis of Cholecystitis and Adhesions. *A. M. J.* 1919 CX 241.

The chronic variety of cholecystitis is the one most commonly referred for roentgen diagnosis. If the clinical signs suggest its presence the roentgen findings of periduodenal adhesions spastic contraction of the prepyloric gastric and a density of the bladder shadow may be considered as conclusive evidence. The visibility of stones which the author states may be shown in 85 per cent of cases greatly minimizes the possibility of error. In conclusion the author cites Cole to the effect that the roentgenologist can recognize and differentiate these conditions with about the same degree of certainty as can the surgeon at an exploratory operation without a microscopic examination of the specimen. ADOLPH HARTUNG.

García P. J. The Islands of Langerhans and Their Endocrine Functions (El isle de Langerhans y su función endocrina). *Semana Médica* Buenos Aires 1919 CXVI 6.

In the opinion of the author who reviews the literature regarding the structure and functions of the islands of Langerhans the belief that these islands are ductless follicles should be abandoned. Embryology and comparative anatomy prove the epithelial nature of the cells comprising them and their connection with the internal secretory system.

Also abandoned should be the belief that the islands form a body with the exocrine acinous parenchyma and that after a time they segregate the ferments of the pancreatic digestion especially the lipolytic ferment.

Embryology and comparative anatomy assign to the islands of Langerhans the rank of a glandular formation belonging to the so called ductless glands and the which return their secretion directly into the blood vessels. It would seem legitimate from the embryology and comparative anatomy to admit that after a certain time of functioning there is a secretory inversion. A double bipolar secretion appears to be assigned to the pancreatic cell not simultaneously in the liver but alternately. According to this view the pancreatic cell has two cycles one of external secretion while it forms part of the exocrine acini and the other an internal secretion when it constitutes the islands of Langerhans. The acini

a lth island f Langerhan are re e sible after a certain lap e ft me e the ac o s form pass s to the in ul d ce e a

Th urret fuction f the i lands of La ger han tl ello ation of substance h ch s les tin d p b bly ith th d f th l er a l in r ma t ll unl t d to regul te the met bol m f ugr in th g i sm W A Br

MISCELLANEOUS

M l Im J D Dev l pm nts in Abdomin l S gery Sin 1884 f R S M d L d q 8 S t Ob t & Gv

M l oim th d elopm nt of abdom nal k v ut th S ma t n l e Hospital sin e 834 (p) r on f r f mel c the abdom lly l v s n r g n lly b a physican h a f b l l n t pen th b d m A a n l man p u l a t i s l e d sou c f s e e r n t m t n ot th ha d an l p e s n of the op at r l l t ion f th g eon f n l l p s t l co tamin n a l ult f L s te teach g hich as th n v g e ally d pted by th p ofess Th m th d ol d utmo t cleanl e s of eve y th on n g c n t c ith oundl tructur s L po d u f e nst ment nd ponges e r l d th r l e n t s lution of ca b l cid a d th c n t e a e f the pe atio as payel th t Ma e pong s e r used as abs Ruble glo e n t r l th strum nts we e not loil l Wh l the c bolic l s p v and the fr us f b l cil the pe t n al cav ty had hull l t t m ffect the perati s v e e f n f l l l b y un t rrupted r covery

A m l l n i ty f urge h a l l l v La n T t pp c l t the u e f a bolic acido ny oth r h m l olution o a v t s s u nd the p r t n um Th se oppon ts h we e r m under

stood Lister s teachi g the p inciple of v hich d d not lepend upon any specific chemical Lister de manded onlv such management of a surgic l case as shall effectually prevent the occurrence of put efac t n in the part concern d The e was also a great difference f opinion regarding the admin strat on of op m He follo ers of L ster gave op m rather f eely to find up the bo el for several days Little f od or flui s s e n by the mouth but small quan t t i s e e d m i n t e r e l by rectum A rectal tube v t o d u c e v three hours before feed g ith beef tea A f e e passage of gas usually ind cated go d r e v e y The ne school advocated early e acuat of the l el and no opium

Th author p formed ll postmortem v mina tio f r a l o t years and states that alth ough the m r t l v of both schools v s nearly equal the mode of d th s e r v d fferent Wh n the L ster method v s f l l l the cau of death hich u u lly oc u l on th f i f th d y as intesti al ob t c t on a m p r i n e d l a t r b y a diffuse periton t s When the method f Lister s opponents v s foll e d death u u ally c u r r e d n the th d day and was due to a d f f u suppurat e p e i t u s v for ard step v s m r d t e r i l a t o n by heat

In the b g n n o p r a t i o n s e e p e r f o r m e d in the p r t e t s r m w h c h a s e p e c c a l l y s e t a s i d e f o r h e r o n u s e and in h c h s h e m a i n l d u n g the first five or day f c o n v a l e s c e n c e O n e n u e n a i n t t e n d e d u t h i p e r i o d The abd men v s e l y p e n e l h e n r i n a c u t e i n f l a m m a t i o n w a s i n p o r s e e n the removal of ne ly str a u l t e d t u m b e i n p o s t p o e d The whole mortal ty from abdominal peritio s a s a b a t 14 per cent In o i b t l e e s p o n d i n m o r t a l t y a s 4 / p e c e n t t a k i n t o a c c o u n t a m u c h l r g e r and more d n e r o u t y p of o p e r t v e k I m p r o v e m e n t in t e c h n i q u e f l l e d the r a n of the patient s h p s i n p e l c o p e t i o n s I t b a f G O L D M t

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES JOINTS MUSCLES TENDONS CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

De G u l j e n d N than Path logi Study of Bon Sub t n c (Et d p th l g u d p t l b t) B R t S d j d l j 8 l 938

The uth s have lready publshed in e t s work le o of the spo v lone ti ues Th p e n t k s p p l e m e n t a v t o th and cons ts f t o p a t s In th f i s t p a t a study is m d of bone e g n e t i in the i c i t y of h a e m o h a g i f c the h l e h e l d of e p a t o t e o g n e s i b e i n g e e e d In the sec nd part the tudy of the r a c t s of c m p a t b o n e t i s u e i s t a k e u p

With eg d t o b o n e p e a r i o n e h a e m o h a g i c a r e s the concl u s r e c h e d a r e a f o l l o v s

1 l i o t e u m o s t s o s t e o g e n e t i c p r p e r t e s l y t o t h b o n e p t i c l e s h i c h a d h e r e t o i t s d e e p f a c e Th i f u l t y i s c o m m o n t o i t a d a l l o t h e r k n d s of c o n n e c t i v e t i s s u e

2 O i c r t o n t a k e s p l a c e n the n t e r i o f H e v s i a n c a l l the l u m e n of h i c h i s p o g r e s i v l y d i m i n i s h e d a n d o b s t r u c t d

3 O s s e c a t i o n m a y t a k e p l a c e a t o b d i f f u s e p o l i f t i o f the o s t e o b l a s t s w h i c h p o r e s v e l y i n a d e t h n e g h b i n g c e c t e t s

4 O i c r t o n m a y b e f f e c t e d e c t i v l y w i t h o u t the m e d a t i o n of t e l l a s t s b y th s i m p l e t r a n s f o m a t i o n f e l l a g e n i n t o p r o s s o u a b s t r c e In such c a e a N a g t t e h a s o b s e v d the f b r o b l a s t t a k e s n the c h a r a c t e f a t e o b l a s t n l y a f t e r c o m p l e t e t r a n f o m a t i o n of th c o l l a g n

Th c l n l d e d u c t n s f r o m t h i s p a t of the s t u d y a r

1 The presence of a hæmatoma is an obstacle to bone regeneration

The larger the surface of bone in contact with the neighboring connective tissues the better

3 Bone repair may be effected at the expense of fibrous tissue the collagen of which is transformed into pre osseous tissue under the influence of its surroundings

In regard to the reaction of the compact bone the authors reach the following conclusions

1 Compact bone has one fertile bed i.e. the middle bed that of the Haversian canals This osseous bed reacts to all traumatic or inflammatory causes by a more or less complete return to the condition of indifference

The reaction which can be seen radiographically shows enlargement and multiplication of the Haversian canals and diminution of the staining affinity of the bone substance

3 When the external limiting layer of bone surface is destroyed the middle bed if uninjured or injured only slightly is capable of proliferating into the neighboring connective tissue Hyperostosis becomes exostosis

4 These anatomic processes may be produced experimentally

5 The repair of compact bone tissue by means of connective tissue is worthy of a place in practical surgery

6 The external limiting bone layer is an arresting layer interposed between the middle bone bed and the neighboring connective tissue

W A BRENNAN

Cowan J F and Ely L W A Study of Buried Bone *J Orthop Surg* 1910 100

After a study of a series of knee joint resections in a dog the authors come to the following conclusions

A patella or the fragment of another bone freshly embedded in the muscle of the animal from which it was removed has a tendency to disappear but does not disappear completely for a long time It has not disappeared completely in any of their cases The structure of the bone fragment become less dense The bone tissue itself may be replaced by fibrous tissue especially at or near the circumference or may be absorbed Absorption is the rule in the interior Occasionally typical rarefying osteitis by osteoclasts is seen More frequently the process seems to be simple absorption—halisteresis The method of absorption is often difficult to determine for about many of the trabeculae no giant cells no leucocytic infiltration and no increased vascularity of the marrow are found

Many of the cells disappear from the bone early Others stain well after a long period of time The bone usually dies

A patella with a complete investment of bone and cartilage does not resist absorption better than a bone fragment in which the marrow is exposed to the surrounding tissue

A blood supply is established in the marrow of the buried bone The marrow has a tendency to become fatty and fibrous though patches of lymphoid may persist In animals which have died with an acute infectious disease it is engorged like that of normal bone under such circumstances In other words it is functioning as marrow

Cartilage becomes eroded at its surface and is replaced by fibrous tissue In areas it sometimes disappears completely Often its cells stain well after a long period of time Sometimes they die after a shorter time The buttress underneath the cartilage almost always disappears early

Judging from appearances the buried bone becomes smaller in size

Roughly the changes in bone and cartilage are the same as those seen in arthritis of Type 1—atrophy or proliferative arthritis R B COFIELD

Haas S L The Changes Produced in the Growing Bone After Injury to the Epiphyseal Cartilage Plate *J Orthop Surg* 1919 1 67 166

Since the long growth of bone is maintained by constant changes in the epiphyseal cartilage plate and since injury or operation interferes with the normal function of this cartilage Haas has undertaken to demonstrate through experiments on young dogs and kittens of from 6 to 8 weeks of age what injury or operations will affect growth in the epiphyseal cartilage It has been proved that the functioning of the epiphyseal cartilage plate is dependent upon an adequate blood supply the loss of growth being much greater when the nutrient artery is destroyed than when there is interference with the blood supply entering the bone in the region of the plate itself Closely associated with the blood vessels is the character of the constituents of the blood When some necessary chemical element is lacking a loss of growth is apt to occur Thus disturbances in growth frequently result in certain diseases and abnormalities of the endocrine system

The author found that an incision across the epiphysis produced very slight if any disturbance in growth when the operation was performed on a growing bone

On separation of the epiphyseal cartilage in the line of cleavage a disturbance in growth occurred which was perhaps equal to that which takes place after incision into the cartilage Under ideal conditions however it is possible to make a separation without causing a loss of growth though to attain such a result the amount of destruction to the cartilage cells and the circulation must be minimal

An incision through the metaphysis healed like a fracture in the shaft of the bone without causing any disturbance in length growth

Injury by incision across the bone distal to the epiphyseal cartilage plate and an incision across the metaphysis proximal to the plate were without effect upon the longitudinal growth An incision in the epiphysis is more likely to result in a disturbance

Paris stated that it was not new in France. Franco claims the method originated with Durante of the Surgical Clinic of the University of Rome. The fundamental principles of this method were outlined by Durante as far back as 1806. It was first put into practice in the Surgical Clinic in April 1917.

W. A. BRENNAN

FRACTURES AND DISLOCATIONS

Catterina A. *Clinico-Experimental Study of Fractures of the Clavicle* (Studio clinico sperimentale sulle fratture della clavicola). *Chir. d'org. di Bologna* 1919, III, 1.

Catterina reports briefly two cases of clavicular fractures one of which he treated surgically. He also reviews the literature of the subject.

The ideal treatment of all subcutaneous clavicular fractures in his opinion is surgical treatment which permits perfect reduction and retention of the fragments. No apparatus guarantees their perfect position.

If it is decided to treat by a bloodless method those methods should be employed which keep the limb in abduction and internal rotation. In transverse fractures the dislocations are more easily and rationally treated by abduction and external rotation (Klapp's method).

In recent open gunshot fractures the treatment of the fracture is secondary to the treatment of the lesions of the mobile organs in the vicinity: the arteries, veins, nerves, thorax, lung, etc. If the fracture is limited to the clavicle the normal rules for the treatment of open war fractures should be followed: i. e. removal of foreign bodies and bone chips, drainage and immobilization of the injured parts in a Desault bandage with the elbow flexed at an acute angle.

In old gunshot lesions of the clavicle with conspicuous displacement of the fragments, deforming callus, pseudarthrosis, etc., the usual treatment of such lesions is given.

In subcutaneous fractures of both clavicles which are almost always complicated with other severe injuries of the thorax, head, or limbs it is advisable to abstain from any kind of operation.

W. A. BRENNAN

Stevens J. H. *Fractures of the Upper End of the Humerus*. *Surg. Phila.* 1919, I, 4.

The treatment of fractures of the upper end of the humerus which involve the shoulder joint has been various, but in the great majority of cases the results have been remarkably alike, that is, unsatisfactory both to the patient and to the surgeon—long periods of disability with restriction of motion and often permanent disability out of all proportion to the apparent pathology.

Fractures of this type have been treated seemingly with little understanding of the physiologic anatomy of the shoulder joint and an equally slight understanding of the mechanical factors which enter into

the problem of restoration of function once there is a solution of continuity of the bone structure with injury to the joint surface.

The author classifies fractures of the upper end of the humerus as follows:

Type 1. Fracture of the greater tuberosity without displacement. Subdivision A. With displacement. Both types may be complicated by subcoracoid dislocation. The shaft and neck are both intact.

Type 2. Fracture of the neck of the humerus without displacement. Subdivision A. With displacement of fragments the head remaining in the glenoid. Subdivision B. Displacement of the head from its relation to the shaft. The head is also dislocated out of the glenoid.

Type 3. Fracture of the neck of the humerus with complicating fracture of the shaft of the bone.

Regarding the treatment the following conclusions are drawn:

1. Fractures of the upper end of the humerus i. e. above the insertion of the pectoralis major muscle will in nearly all cases conform to the three types given and their subdivisions. All should be treated in adduction and external rotation with traction varying from a few days in mild cases to twelve days in complicated cases.

Passive motion must be begun early and followed very quickly by active motion to prevent the tendency to restriction of motion. Care should always be used and due regard taken of the anatomy and pathology. In the mild cases it is safe to begin motion very early since there is little tendency toward displacement.

3. A right angled wooden splint in severe cases and a firm pillow splint in mild cases with traction is the ideal method of treatment.

4. External rotation in abduction as a treatment is almost impossible unless the patient remains in bed when it is the simplest method and not uncomfortable.

C. W. HOCHRIE

Elmslie R. C. *Pseudocoalgia Following Traumatic Dislocation of the Hip in a Boy Aged Four Years*. *J. Orl. & S.* 919, 1, 109.

This article is the report of a case of what was apparently osteochondritis juvenalis or Legg-Perthes disease following reduction of a congenital dislocated hip. The important point in the X-ray finding was the thinning of the epiphysis of the head of the femur which was irregular and in some degree overlapped the broadened neck of the femur.

While no direct mention is made of partial separation of the epiphysis attention is called to the possibility that there had been some interference in the nutrition of the epiphysis. The author states it is generally believed that during early life at least at the age of the patient whose case is here reported nutrition is conveyed to the epiphysis by the ligamentum teres and that later on when the neck is less cartilaginous it receives its blood supply through retinacula.

A. STEINDLER

Thomas splint with the usual extension attached at its end. At the junction of the ring with the inner bar and at the same level on the outer bar is a pivot to which is attached another or inner Thomas splint minus its ring. The latter fits easily within the outer bar and is bent 4 inches from its lower end so as to raise the whole off the bed. On raising the outer splint the patient's leg and thigh are lifted while the inner splint turning on its pivot remains resting on the bed. On this inner splint are perforated zinc slings. All the slings and pads which support the limb are on the inner splint but one sling under the knee on the outer splint is found useful for support in doing dressings. To dress the posterior wound an assistant raises the outer splint and the attached leg to an angle of 50 or 60 degrees when a good view of the wound can be obtained. While in position the two splints are fastened together at the end by clips or a piece of bandage. C. D. HOLMES.

Massie R. and Swanson G. C. Notes on Gunshot Fractures of the Femur. *J. Roy. Army Med. Corps* Lx d 1919 xxxii 24.

Observations were made from a series of 155 cases of gunshot fracture of the femur admitted between January 1 and August 14 1918.

Fractures caused by long range high velocity bullets are less serious than those caused by ragged projectiles or low velocity bullets. The latter are more common. The highly comminuted fracture is the most frequent type.

In fractures of the upper middle and lower thirds alike it has been found best to follow the same general idea of extension to the position of abduction and semiflexion of the hip and flexion of the knee.

The extending force must be in the direction of the long axis of the upper fragment with the lower fragment aligned with it.

The authors describe an apparatus consisting of extension and suspension poles which is simple in construction yet capable of being so adjusted that a pull may be obtained from any point in any direction and of any weight requisite for the reduction of the fracture.

The medium ring Thomas splint is most useful except in cases of high buttock or perineal wounds.

Extension by adhesive strips or glued gauze has the disadvantage of being an indirect method of applying traction and of causing blisters or skin sloughing.

A superior method of extension is the application of callipers to the condyles of the femur except when there are wounds of the lower third of the thigh in which case there is difficulty in maintaining asepsis.

The calliper points should be introduced through a small puncture wound to obtain a water tight junction. They should not be sharp and should penetrate the bone not more than $\frac{1}{8}$ inch. If uninfected they may be left *in situ* for six to ten weeks.

In cases not amenable to extension internal fixation may be applied by wiring by encirclement or

in cases of transverse fracture by wiring a Lane's plate to the opposing ends of the fracture.

Chief among the complications are (1) Involvement of the knee joint (2) involvement of the sciatic nerve (3) gas gangrene (4) secondary hæmorrhage (5) comminution and (6) spreading sepsis.

Spinal anesthesia or gas and oxygen are the anæsthetics of choice when amputation is necessary. The fall in blood pressure observed during the first ten minutes following spinal anesthesia is best counteracted by the injection of intravenous saline or citrated blood.

In the treatment of wound dependent drainage is preferred to the Carrel Dakin system.

V. F. DUDMAN.

SURGERY OF THE BONES JOINTS ETC

Nutter J. A. Reconstructive Surgery the Problem of Records. *J. L. M. Ass.* 1919 Lx ii 410.

The author describes a very practical method of tabulating and charting the range of motion in different joints especially of the wrist and hand without the use of complicated apparatus. The method is simple enough to be entirely practical. Diagrammatic drawings representing the hand and fingers are made with a single line to show the arc of the forearm metacarpals and phalanges. This graphic method offers very good and accurate records. A. STEINDLER.

Harrigan A. H. The Use and Value of the Lane Plate. *Ann. S. g. Phila.* 919 Lx 161.

Harrigan reports the results of sixty two open operations for fractures. These results have made him a strong advocate of the use of the Lane plate in certain types of fractures particularly fracture of the shaft of the femur the tibia and the humerus. In this series the Lane plate was employed thirteen times. The other material used for fixation were silver wire kangaroo tendon nails bone grafts and fascia lata.

For strong robust and muscular persons with either a fracture of the femur the humerus or the tibia presenting great displacement and over riding and necessitating an open operation a method of fixation must be employed which guarantees successful reduction.

An ideal fixation apparatus should be capable of absorption. Therefore use has been made of absorbent plates screws and pegs of ivory magnesium decalcified bone etc. On one occasion the author used a long narrow strip of fascia lata passed through two drill holes in the shaft of the femur. Unfortunately the patient developed diphtheria several weeks later and was transferred to another hospital where he passed from under observation.

The objection to the Lane plate prominently advanced is that it delays callus formation and bone union. The validity of this objection is admittedly based on clinical experiences. All methods of

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S g n t P Th Cl su e of C t i s n B ne J
R y t r U C p L d o g 83

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L Fu R P l m r y O t osynthesis in W Su
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Regarding the influence of the age of the wound on primary union and successful results in osteosynthesis Le Fur states that in of the first 14 cases in which the wound was from eighteen to twenty four hours old there was rapid consolidation and re union by first intention in 3 cases of wounds twenty four to thirty six hours old there were primary reunions and 1 failure of union in 6 cases of wounds thirty six to forty eight hours old there were 5 successful consolidations and 1 delayed union 3 primary reunions and 3 failures to unite in 3 cases of wounds more than forty eight hours old there were 2 delayed unions the wounds in these cases being left open and treated by the Carrel method in one instance the bone consolidated rapidly after reunion

These results show clearly that the more recent the wound the more constantly a successful consolidation is obtained the older the wound the less chance of early union and consolidation They show also that primary osteosynthesis is possible in a wound forty eight hours old with good prospects of success

The results were generally very satisfactory several even remarkable Fractures of the humerus consolidated in about one month those of the leg in about one and one half months the fractures in from one and one half to two months The functional results were generally very good In fractures of the humerus ankylosis of the elbow was not noted Cases of fracture of the thigh were more remarkable In one of these after one and one half months and in the other after two months not only was the fracture consolidated but walking was possible in a short time without the use of a cane

The striking effect of primary osteosynthesis is the rapid return of function This is undoubtedly explained by the absence or practical absence of muscular atrophy and articular stiffness due to the fact that immobilization is not continued too long and physiotherapy can be begun very early

In osteosynthesis in the upper limb Le Fur sutures or binds with aluminum bronze wire In the lower limb Lambotte plates and screws are used

W A BRENNAN

Duhamel G and Lamure J P Bone Regeneration in the Adult After Surgical Excision (Pé-
génération osseuse chez l'adulte après excision)
Lyon chirurg 918 x 449

For a war fracture of the neck of the humerus Duhamel performed an extensive subperiosteal bone excision dissection and clearance ten hours after injury followed by primary suture Regeneration was rapid and complete in two months There was no shortening of the limb The loss of substance in the humerus immediately after the operation measured 5 cm

Lamure's case was a severe fracture of the tibia A similar operation was done four hours after injury Regeneration of a 3 cm defect of bone occurred

W A BRENNAN

Brooks B Studies in Bone Transplantations a
Study of a Method of Increasing the Osteo-
genetic Power of a Free Bone Transplant
Ann Surg Phila 1919 lxx 113

This paper is a further report on experiments on bone transplantation conducted by the author The object of the experiments was to test the value of a method of increasing the osteogenic power of the autogenous bone transplant in order that a defect in the shaft of a bone of an old animal might be bridged by a free bone transplant with better prospect of the ultimate successful regeneration of the defect

As experimental animals the oldest dogs available were used Before beginning each experiment the age of the dog was estimated by observing the state of preservation of the teeth and the animal's general appearance and activity

On each animal two operations were performed The first stage was as follows

After the usual preparation of the skin an incision was made in the lateral surface of the left thigh and the shaft of the femur exposed With a motor twin saw parallel incisions 4 mm apart and 6 cm long were made through the cortex of its shaft Great care was taken not to strip away the periosteum between the saw cuts The wound was then carefully closed The skin sutures were removed on the third day after operation

The second operation was performed in most instance seven days later The animal having been anesthetized and the skin of both forelegs and both thighs prepared incisions were made in both forelegs and 4 cm of the shaft of each ulna was resected Great care was used to remove the sections of bone with all the periosteum The wound in the left thigh was then opened and the femur exposed Transverse saw cuts were made in the shaft of the femur at the ends of the parallel incisions which had been made at the previous operation The bone transplant was then easily freed with a knife The transplant showed marked thickening of the periosteum and there was evident new bone formation along the periosteal and endosteal surfaces This transplant was used to bridge the defect in the left ulna

An incision was then made in the right thigh to expose the femur With a motor twin saw another transplant 4 mm wide and 6 cm long was removed from the shaft of the right femur which had not been subjected to previous operative injury Great care was used not to strip away the periosteum from the transplant This transplant was used to bridge the defect in the right ulna All wounds were closed and both forelegs dressed with plaster dressings

Beginning on the fourteenth day after the second operation the animals were given intraperitoneal injection of 3 cc of a 5 per cent solution of sodium alizarine sulphonate twice each week until the end of the experiments At the end of periods of 23 to 173 days after the second operation the animals

eurotic plastics can be utilized. This is especially desirable in the case of short stumps in which reamputation compromises the use of mechanical prosthetic apparatus. W. A. BRUNNAN

Hofheimer J. A. Emergency Suggestions Conservatism in the Surgery of the Hands and Feet. *Internal J Surg* 1919 XLVII 45

Conservatism in the surgery of the hands and feet is often neglected because of greater interest in major surgery resulting in the loss of a finger or serious impairment of function.

Impatience on the part of the surgeon or the anxiety of the patient to return to his work at the earliest possible date often causes the treatment chosen to be that which involves the shortest time. Useful members may be thus sacrificed which might be totally or partially preserved by careful dressing and the maintenance of position by splints or other appliances.

The prognosis is much better if the case is seen early and such treatment applied at the outset.

The writer cites several cases which were very unpromising because of the severe lacerations and mutilating injuries sustained and in which the parts were preserved and useful function restored by adherence to strict conservatism.

A hot solution of 5 per cent tincture of iodine in sterile water was used for bathing the wounds. Excessive handling or cleansing was avoided.

Before radical measures were instituted in any case time was allowed for shock to subside and the injured part to rest and regain as possible nutrition. A. F. DUBMAN

ORTHOPEDICS IN GENERAL

Stern W. G. A Report on the Cleveland and Elyria Cripple Surveys. *J Orthop Surg* 1919 I 23

A cripple is defined as a person whose muscular movements are so far restricted by congenital defect

result of disease or accidents as to effect his capacity for self support. A house to house canvass was made the city being divided into eight districts and reports obtained from practically every family rich and poor alike. More than 65 per cent of the total number of cripples found in a certain district were discovered only by the house to house canvass. Volunteer and paid social workers collected the data. Probably 100 out of the 150,000 families refused to give any information. It has cost \$12,500 to complete the survey of 4,186 names.

The type of cripples varies so that no single or simple means will satisfactorily provide for their vocational preparation. In adults the number becoming cripples during working life by accident men especially is very large. Employers to avoid risks of liability place the handicapped at an increasing disadvantage by avoiding their employment as much as possible. It is recommended that a central bureau or federation of agencies interested in cripples and their welfare be maintained representing all forces touching on their lives: medical, educational and industrial. Such an agency must carefully work out a plan of adequate medical and educational care for crippled children, devise means of safeguarding the interests of the crippled adults and secure trained workers to carry out this program.

In the survey in Elyria and Lorain County only cripples under fourteen years were tabulated. The ratio was 1 to 400 population. About 50 per cent of all the cripples in Lorain County were found in families who could not afford to pay for the proper medical treatment and education.

It was established that 65 per cent of the cripples were not known as such to the public free dispensaries, charitable and other social agencies. Forty-nine per cent of the total cripples were disabled in childhood. Seven per cent of the disabilities were due to congenital causes, 43 per cent to accident, 47 per cent to disease and in 3 per cent the cause was not known. J. J. KURLANDER

SURGERY OF THE SPINAL COLUMN AND CORD

Claude H. and Lhermitte J. Complete Anatomic Section of the Dorsal Cord. Suture of the Cord. Survival for eight Months. (Sur un cas d'ectomie anatomique complète de la moelle dorsale, suture de la moelle survie de huit mois.) *Bull et mém Soc méd hôp de Pa* 1918 XLII 1051

In the case of a soldier injured by a shell the histologic findings at the autopsy confirmed the existence of a complete section of the spinal cord at the level of the tenth dorsal segment.

The alterations in the ninth segment were very pronounced. The tenth had disappeared being replaced by fibrous tissue where the cord had been sutured in operation. The eleventh segment was softened and without functional value. Only toward the twelfth segment did the condition of the

cord approach normal. The clinical history of the case gives the motor and sensory findings and the reflexes. In spite of the total section of the cord the occurrence of which was proved the patellar reflexes reappeared six months after the onset of the condition and were present until the end. The cutaneous plantar reflex of the large toe could be elicited in extension on one side contrary to what has been noted in other cases. This reflex in extension ought not therefore to be considered a sign of incomplete section. The same applies also to the so-called defence reflexes, automatic movements and erections which indicate functional activity and even erythema of the lower segment of the cord observed only if there is sufficient preservation of its constituent elements.

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The cry cl r indication s therefore to act q lly b fo the onset f inf ct on and cachexia

Taking all po nts into consider tion the uthors p et r m d n bilateral hm ectomy Re iona l sthesia s employed and the patient placed in a posit on b t een vent al nd lateral decubitus The ri steps of the te hniqu are given n det il W A B r n

SURGERY OF THE NERVOUS SYSTEM

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MISCELLANEOUS

CLINICAL ENTITIES—TUMORS ULCERS ABSCESSSES—ETC

D r J B Tl S g al C mpl ti ns nd
S q r e of Influen W d Cl v f o s
699

D e has had e e al p t e s r ntly rec red from fl nza come t per tion f t t n l obst u t The testine ere knotted d bou d do n b v pl a t e u d te and dlesion esemblin th e of tub ul r pe toniti While the mp es i n as gain l th t th condition may h e been a dire t ult of the nflu n a no post e e d n e s obtain d A n ber of auth rs have noticed n esel i len e of app nd c tis i nflu n v ea While p bly many of such c s are ps udo append cit s due to the gastro int st l s mptoms o ft n a part f th svnd ome of infl

e ther e und ubtably cases f ge u e pp nd t r ulking f m an increa ed v ulence of th us al i testinal m c o organisms and par t l rly to a p d spo t n on the part of the pati t to app nd v trouble Th e pla t o (lov d r t nc nd diath) undoubtedly also ppl t the ou n u l gias d s ases of bone and j nts phl but parot t s etc that may follo il en a nd req e surg c l te ent

The term surg l complications and sequelae of influe a mor pt to imply the effects f the pulm v invol ement h ch s eque tly forms part of the pictu e a d is o p o m n t a fe tu e of the ec nt epidem C The medic l p r t f th subj t s of p m mpo t e t the surg o

Asp rat on unde prop r as pte preca t is a compa at vel s mple and s fe p cedure When the il d is se o purulent r purulent thdra l

by aspiration is desirable as a preliminary step to thoracotomy or rib resection. Aspiration is of utmost value in allowing the lung to expand and the displaced heart to recover its position. The relief afforded also puts the patient in better condition.

In addition to frequent needling and the information derived from the physical signs, the fluoroscope and X ray are most valuable aids in the diagnosis.

A rational operation for empyema is the one devised by Lilienthal in which a wide opening in the thoracic cavity is obtained by means of a long costal incision and wide rib spreaders. This gives ample exposure, permits the breaking up of adhesions and the removal of pyogenic membranes and allows full expansion of the lung. The wound is closed completely except for a wick of rubber tissue at each end of the incision.

In the streptococcal pleuritis observed in the extensive epidemic of pneumonia during the past year in the various military camps it seems that late operation gave better results than early intervention. The effusion in streptococcal cases appears early, in fact is often the first sign of infection of the respiratory tract. Operation in the acute stage, in addition to other risks, presents the danger of collapse of the lung from pneumothorax as well as a possible infection of the blood stream from absorption of the streptococci from the fresh surfaces of the wound.

A valuable suggestion is that all patients with pneumonia at the end of the second week be subjected to an X ray examination for the early detection of any fluid that may be present and which cannot be always detected by the physical signs.

The operation of choice for empyema is rib resection, opening the pleural cavity and exploring with the gloved finger or the hand, thus effectively reaching all pockets of pus, flushing and wiping the cavity with Dakin's solution and providing continuous and free drainage until the fluid returned is practically sterile.

In two cases the author closed the wound at once and both patients did well. By preventing the entrance of air from without the immediate closure of the wound, when it can be done is useful in overcoming possible pneumothorax.

Deaver's operations were usually performed under nitrous oxide anesthesia and consisted of resection of about 1/2 inches of rib, the sixth, seventh or eighth according to indications, evacuation of the pus, the wiping of the cavity and continuous drainage with gauze or rubber Carrel tube being used only occasionally. Faithful and intelligent dressing daily with Dakin's solution has given excellent results. The author sometimes found it advisable to discontinue the use of Dakin's solution after about ten days substituting carbolic permanganate or saline solution.

During the present epidemic the author has treated 35 cases of influenzal empyema with a mortality of 11.6 per cent. (W. H. KELLEY)

Acuna M. Subphrenic Abscess in Children
(Abscesso subfrenico en el niño) *Semana med*
Buenos Aires 1918 xxv 52

Subphrenic abscess is most rare in very young children. In 1,905 cases of subphrenic abscess collected by Maydl in 1894 there were only 10 cases in children under 15 years of age. The youngest patient was a child 18 months old whose case was reported by Jopson. In some instances the condition was due to traumatism but in the child the cause is more apt to be appendicitis.

The author reports the details of the case of a child 2 years of age who while in full health suddenly developed the clinical picture of an abdominal affection complicated with symptoms of purulent pleurisy at the base of the right lung. The fetid nature of the pus extracted by puncture suggested that the suppurative pleurisy was secondary to appendicitis but Pfuhr's sign which was elicited several times showed that the collection was subphrenic and not of pleural origin. In the radiologic examination it could not be decided whether the collection was in front of or behind the diaphragm. Operation showed it to be between the liver and the diaphragm. After complete draining the child made a good functional recovery. In this case the subphrenic abscess was apparently secondary to appendicitis, the infection being spread by the lymphatic route.

The author lays stress on the following points:
1. The early age of the patient. At this age suppurative pleural collections are frequent but subdiaphragmatic collections very rare.

The fetidness of the pus. When in its early stages a pleural effusion is fetid it must be considered to be either a complication of appendicitis as in the majority of cases or secondary to a perihepatic abscess, especially a subphrenic abscess which has spread through the lymphatics of the diaphragm. In the case reported the pleurisy was protected from invasion by numerous strong adhesions.

In conclusion the author calls attention to the clinical value of Pfuhr's sign, i. e. whether the pus runs through the exploratory puncture at expiration or inspiration. (W. A. BRENNAN)

Soresi A. L. A New Theory on the Pathogenesis of Cancer the Connective Tissue Theory
(Una teoria sulla patogenesi del cancro la teoria connettivale) *Poliedri* Roma 1919 xxvi sez. chir. 2

A satisfactory theory of the pathogenesis of cancer should explain how the neoplastic cell is formed, how it becomes free and how and why, when once set free, it becomes independent and without function a monstrosity which multiplies without limit and finally destroys the organism in which it is developed.

According to Soresi's views the formation and development of the neoplastic cell has the following periods: Loss of substance, formation of cicatricial tissue, continued and direct stimulation of the

catrictal tssue th con eque nce case the number nd a tiv ty f n ly formed connect e t s y cell (cic tr l tis e) inhlt ation of the n ly f med c eectiv t u cell am g the o ginal cell of th rgan n h ch th atrical t sue fo l mpr so ment of ori l lls ntinued tality of the r ginal cell h h at length d generat lo m g jote l t mor n dule d nut of the numbr actvity and r s t ne of th e l form d c n e tve t s u ll l t o f th imp son d origi al c ll h ch titut tl n pl t c ll nd dflu n f thcs pl t ll

So g h e n s pport f the eque f the steps th d elment of a cer In h so in them lgn v of nce does n l p e d them l gna c v l the can e cell p but i due t th f c t th t t etal ic phenom na f the r cell a n t n h a n n w th th phy logic phe m f the o g a n m C ncer ell are cells h h h ng b om l t ched f om the medium h h h t t l t h e h a q rel t l h l t j l f m (the h l f r t m t l l t l h l th m e l e they n u l t y l v d l t t e t l y a n m l m a n n r f r m that h h th v l l l l l o l e r m a l o n l t o s W A B A

SERA VACCINES AND FERMENTS

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I Ap l l st l utl rep t t l e l t att mpt of t t t t c ciat f nd by an ut v cne st d l v th s um f th p tent l ly 8 p e c t of th s s th e l t fa bl 8 n the n tr i ha e b n made th th n t d l l p s Th nt str pt slp p par d th l teu Int t t n l n v t i pu a f d fter t str f t t t c u r a m e l o t m n n d l t t th t p h l c u s a d the B F edlander l t t j e t e d b e u t e u l th delto d e g n los g of c h h m v b r p e r t l s n e a Th eth e n t e l v r e is p e p a r l b v th th r f r m cult es f stan f trepto c i t m l r l j e t e d n d a g f t c h h s r e d r v h e r l a v s as nece v

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47 ith lipo accine an l r v th ether sensitized va

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He l n g b f r i t t n t n g e n e r a l l y l t n e d i t h a r t e c l a n r l l t h i c n j u i T k n g i n t o a u t o n l y t h o u n d f t h b o n and f p t i n f t e l b y t h e s t p t o c s t h e p e r t g e f u c c f l e u l t t o l l g o p e a t o n a f a a t n s o h h u p s s e t h e s u l t s o l t e l o n t e p t c u n l I t s d e r t l f c e t h a t t h e v a c n n a t e d l y a n l t t h r g l t e m e n t f t h e j u r v The e f f t f t h c n a t o t h r l u c t i o n f a o u n d i n f c t d i t h t e t p t o u s t a n i n f e t e d t p h y l c o c l o n d I t t h e f o r j u s t i f i e d a m s o f b t t e r n s t h s u g l t r m t n t o f t p t c c a l a o u d a d p r n t i n g t h c m p l t o n s n g f r m t h p s i t n f n c t i o n b y t h m c o r g m W A B A

BLOOD

B l y F A S o n d u r y H e m o r r h a s O b r v e d n W a r S u g y s g C i C i g o o 3

In n t r d t n c t n t c i l s u r g v s o n d a v h a m h g r l t l y a m n n a r s u g r y g t o l f t h i e f f h h s t h e l a r g e p e e t g o f n f c t d l

R d c d e g u l a b i l i t y f t h b l l l y t h e s t p t o c c u l t n f t h f c t l t h r o m b and n j t l e s s e l l s l r d s p o s e t o p t u d h e m h a g Th s g n s l y m p t m s m y n o t l p o p t n t e t t h e a n t o f b l d g e s p l l y h n t h t p t e a l p s f t h e a b d m e n d p l a e n o f e d s e c n d a r y h e m h a g f r o m t h l u g s e l a t l v r a r The t r a t e t i s t e n l u s h l t o n g t d e q u a t f a c i l i t y s t h e c e l u l d a l l l d l e d t h e o p t g o m s m a j o r j e a t n I f t h e m h a g c n t r l l a b l e b y d i t p r s u r e h k s h o l l t h t e c m l a t d i d m p u t n a l a v i d d i p o b l e n l t h p t t h s e e l f r m t h e h k A c t u a l l g r t o f t h b l e e i n g e l e n t a l H e m o r h g e t o m t h e f l o o f t h e m u t h a d f l o n g c m p u n d f t u o f t h e m l l a p e n t s d f l e s t h t m a v e q l b t n f t h x t m l c o t i d a r t v I n t h t e m t f s h o k e x t l h a t f i r s t m p t a n I n t r e o u t f f a 6 p e n t g m r b s l u t o n t h p e c n t o d u m b c a r b n a t f a v o r d I n s o s c a s h o e r t h s s n o t o b e c o m p a r d i t h p o p e b l o o d t f u s n The

direct method of blood transfusion is probably the best but presents several technical difficulties and has largely been supplanted by the citrate method

EDWIN M. MILLER

Robertson O H and Bock A V Blood Volume in Wounded Soldiers Blood Volume and Related Blood Changes After Hemorrhage
J Exp Med 1919 **xxv** 139

The determinations were made by the vital red method of Keith Rowntree and Geraghty. Not uncommonly the blood volume was found to be less than 60 per cent of the normal. After a certain point had been reached the reduction seemed parallel with the decrease in blood pressure. Progressive changes in the blood volume following hemorrhage were estimated in three ways: (1) Repeated vital red tests; (2) calculation from changes in the percentage of hemoglobin produced by the injection of gum acacia; and (3) calculation from changes in the percentage of hemoglobin following the dilution of the blood by the patient's own body fluids. It was observed that the organism did not restore its blood volume beyond a certain point when a further increase by dilution brought the percentage of hemoglobin to a very low figure. In such cases a further increase of the blood volume occurred only when the hemoglobin rose.

MAX KAHN

Robertson O H and Bock A V Blood Volume in Wounded Soldiers The Use of Forced Fluids by the Alimentary Tract in the Restoration of Blood Volume After Hemorrhage
J E P Med 1919 **xxv** 155

The authors give the following summary: Blood volume tests made on a number of soldiers recovering from hemorrhage have shown that in many instances dilution of the blood occurs very slowly. The principal reason for this seems to be (1) an initial lack of reserve fluids in the tissues and (2) the absence of any subsequent attempt by the body to make up this fluid deficiency. The blood volume can be promptly and generally increased by putting such patients on a large intake of fluid by mouth and rectum. Beneficial changes were observed some times two to three hours after treatment was begun. When the total hemoglobin is reduced to 25 per cent or below transfusion is distinctly indicated. When the total hemoglobin is above 25 per cent the chief need is for increased blood volume. If the patient's condition demands an immediate and large addition of circulating fluid gum acacia solution should be given. When the condition is not so urgent forced fluid by the alimentary tract are indicated.

MAX KAHN

BLOOD AND LYMPH VESSELS

Viannay C Traumatic Arterial Stupor (La stupeur artérielle traumatique) *Presse méd. Par* 1919 **xxv** 106

Arterial stupor is a condition observed in recently traumatized arteries and is characterized by the

suppression of external symptoms of circulation in the absence of any lesion of the arterial wall. Viannay was the first to call attention to it during the present war. He now reports some new cases the study of which shows that arterial stupor is a slowing down of the circulation due to contraction of the lumen of the artery under vasomotor influence consequent to traumatism. The phenomenon appears to depend on irritation of the sympathetic nerves which may reduce the caliber of an artery in the vicinity of a traumatism to one third or one fourth of the normal as observed also by Leriche and others. Such contraction is especially marked in the humeral, axillary and subclavian arteries. It is strongest in arteries of medium caliber.

In all the cases observed the external signs of circulation were temporarily suspended but the patients recovered without signs of gangrene. Viannay has observed no case in which he believes there was even temporarily a total stoppage of the circulation.

The syndrome is liable to be observed by surgeons in the course of their explorations of vessels after severe traumatism. It is important to recognize it as it does not call for any surgical treatment recovery being spontaneous.

W. A. BRENNAN

POISONS

Sacquepee and Vezeau de L'Yvergne Gas Gangrene Determination of the Pathogenesis and of the Serum Treatment According to the Experimental Action of Specific Sera (Sur la gangrène gazeuse. Détermination de la pathogénie et application de la sérothérapie d'après l'action expérimentale des sérums spécifiques) *Bull. et mé. Soc. méd. d'Inde de Par.* 1918 **xviii** 125

In a series of experiments the authors removed a piece of gangrenous human muscle from an infected area and macerated it in physiologic solution. The resulting liquid was then poured into test tubes 1 cc into each tube. No further additions were made to the first tube. To the second was added 1 cc of antibellonensium serum to the third 1 cc of antivibrion serum to the fourth 1 cc of antiperfringens serum and to the fifth 1 cc of each of the three sera. Tests were then made on guinea pigs.

In a series of 13 experiments in each of which 3 animals were inoculated each animal with a different serum of the 3 animals died in every case. In instances the animals were protected by the antibellonensium serum alone in 4 instances by the antivibrion serum alone and in 3 instances by the antiperfringens serum alone.

In another series all of the three animals died while another which was protected by the three sera together lived. Cultures showed the B. bellonensis and the B. perfringens. The mixed nature of the infection was corroborated in a number of other experiments in which animals inoculated with

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SURGICAL DIAGNOSIS PATHOLOGY AND
THERAPEUTICS

B k C Tl Diagno ti v l u f t h Study f
Path f k C l n g e s n l l o i / D g
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o f t h e l o l y e r e f o u d T h e s e c h a n g e c o n s t e d
o f n e a r l y e d m t s s e l l i n g o f t h f o l l i c l e s
f l l e l l y n c n l a n a c c u m u l a t o f l a r g e
f l t p h g o y e d o t h c h a l c e l l T h e y e r e m o s t
m a k l t h c e n t e r s o f t h f l l c l e s B a d e e n
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l i e r a n d k d e v b u t f l t h e h e a r t m u c l e q u i t e
n o r m l I a m i n a t o f s e c t i o n f o m t h e b r a i n
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t h t h f u n l n t h p a e n l f m a n i n
t l l f d i p h t h e
I u m u p h l t W e i k t t e
t t t h t h m e r l h a t t i c l e
i l i n t h u p r e l s l y m p h t t s u e h t
m l a n d k l n v t k t h t h o e n o t d
t h t h t s m n l n d t e t h e p r e e n n
t l l s f s f m l s s e c i e p c
t h t t g l t l H j v B o

EXPERIMENTAL SURGERY AND SURGICAL
ANATOMY

O l k o n D M Tl E f f c t o f T h y m u G l n d I n
j u c t i o n n t l G o t l n d B e h a v f t h
G u n e a P g i l l t M d 9 8 8 5
T h e i n j e c t i o n f l e e d i g l a l h l e e n i n
e t i r t l f o r t h e m o s t p t b y 3 m t h d E t i r
p t o n o f t h g l a n d t h e f d g f l i g l a d t s
t e s t i n m a l n a m a l s a n d t h e j u c t i o n o f
t i o n p a r d f m t h g n s i n t t h e b l o o d s t r e a m
p e t c a l c t v O k n o l e l g f t h e s p e c i f c
t t o f t h t h y i l a d l a n l h y p p h y s
i b m u n e t a n d l e n i t e O k n o l l g f
t h e n d c i m f u n c t i o n s f l e t t a r i e s c o r
f l u t m a l t h y m u s i n o t e v a t f c t y I n
r t h l e r a t u r e t h a u t h f o u n d t h a t t h e
r e s u l t f r p n e t u g t a f f r o m c o n
d a n t a d m u t u l l y f r m t h v a n m y f
t h e f l l o t a b l o i d f m i n h o n e p e
m e n t s t h e u t h o n t l t h a t p o t i n i j e c t i o n g a v e
e t o m t b o l e l t l e s l n c d b y t h
h g r a t e f g t h a d t h g r a l b o i l y
s g n a l s m p t o m s b t t h a t m a b l h g
c u r e l h t h y m u s v a s a n j e c t e l l H e s u m m a r i z e s
f l l s

Reduction of weight in the guinea pig was produced experimentally by the intraperitoneal injection of thymus. After the injection well marked changes took place, i. e. muscle spasm, dyspnea and convulsions.

The muscular spasms which occurred after thymus was injected appeared to be more severe and of longer duration than those which occurred after injections of protein or tenth normal sodium chloride solution. Some of the animals died after large doses of thymus.

The general appearance of the animals in the thymus series indicated grave metabolic disturbances and emaciation accompanied by dryness and roughness of the fur.

HARRY H. FREILICH

Bachmann A. Immunity to Infection. The Presence of Specific Substances in the Leucocytes of Immunized Animals. (*Immunité anti-infectieuse des cellules pépiciques d'animaux immunisés*) *Rev. Assoc. Med. Arg.* Buenos Aires 418 xvi 549

In his preliminary remarks Bachmann endeavors to show that vaccines and sera have not the bacteriolytic properties in immunity which many have assigned to them. He inclines toward Metschnikoff's theory of phagocytic immunity according to which phagocytosis is dependent on the presence of special bodies which activate and stimulate the action of the leucocytes. Although Metschnikoff did not establish this doctrine, he always endorsed it.

The author has made experimental researches in furtherance of Metschnikoff's ideas. To many previous investigations along the same line, the objection could be made that in provoking phagocytosis the leucocytes were not involved alone but that a plasma was accumulated to which the opponents of phagocytosis trace the fundamental action. To obviate this objection a number of animal experiments were performed by the author in which any possible action of the plasma in the exudates from guinea pigs was eliminated. It was found that a dose of the Fberth bacillus non fatal for an ordinary guinea pig became fatal if the animal was narcotized but that a previously provoked leucocytosis saved the animal even in the state of narcosis, that when the plasma was excluded by sedimentation the animals survived but that animals injected with the sedimentary plasma alone died like the controls. These experiments convinced the author that the fundamental action in immunity is exercised by the leucocytes.

On the basis of his findings Bachmann instituted a new method of treatment by injections of leucocytes, a method which he says Peterson subsequently copied in Europe without giving him credit. An intraperitoneal injection of leucocytes deprived of plasma when given before an inoculation of Fberth bacilli has been found to save animals from infection. The leucocytes of immunized animals have acquired a highly important specific property.

Later experiments have been made to isolate the substance which in the immune gives new properties to the leucocytes. Such bactericidal substances the author is convinced can be demonstrated in the leucocytes of the immune and do not exist in the leucocytes of ordinary healthy animals. There is a fundamental difference in the effects of injections of ordinary leucocyte products and injections of immune leucocyte products. In another experiment Bachmann succeeded in totally destroying the bactericidal property of the leucocytes themselves while preserving the specific leucocyte products. He was able to demonstrate that the specific immunization action lies in the product of the immune leucocytes.

W. A. BRUNNEN

ROENTGENOLOGY—RADIUMTHERAPY

Shohan J. The Need of More Frequent Roentgenological Examinations Particularly in Head Injuries. *Bost. M. & S. J.* 919 clxxx 235

The author makes a plea for a more frequent roentgen examination as soon as possible after an injury has been sustained to determine definitely whether a fracture has occurred or not. Although the number of negative findings will be increased, the positive findings will likewise show an increase and in either case the patient's best interest will be conserved. From the social or medico-legal aspect also it has advantages inasmuch as definite findings make possible more accurate prognoses and form the basis for just compensation when that factor enters into the case.

ADOLPH HARTEN

Bowen D. R. X-Ray Diagnosis of Lung Diseases. *Med. Clin. N. Y.* 1918 1 87

This paper is essentially a clinical report demonstrating the value of the roentgen ray in pulmonary diseases. The author describes his technique briefly and mentions the pathologic processes which may be visualized. A number of detailed case histories are given to illustrate the roentgenograms and findings in diffuse and encysted pleural effusion, pulmonary abscess, pneumothorax, tuberculosis, metastatic sarcoma and pulmonary osteoarthropathy of Marie.

The following conclusions are drawn:

1. X-ray study is exceedingly important in the general diagnosis of lung conditions.

2. The data yielded by the X-ray are frequently such as can be procured in no other way.

3. The valuable aid to be obtained by this method is not even yet generally understood nor so far as the average patient is concerned generally used.

4. The use of the X-ray in cases of pleural effusion, whether the effusion is free or walled off, is immediately and decisively satisfactory.

5. In tuberculosis and many other involvements of the lung, the lesions as revealed by the X-ray are very frequently found to be more extensive than indicated by other clinical methods.

6 If f o o t h r e s o n t h a n t o l m n a t e t h e p o s s i b l p r e s e c e o f n u s u s p e c t e d f r e i n b d v t h e X r a y s h o u l d b u s e d r u t e l y i n t h e c l i n c a l e x m n a t n o f t h e t h

T h e r o f m t a k i n g a n e c e s e p n o t h a f o p l e u r l e f u s i o n o f m p s i l e c e n a m o g c l a f l e e p e c e

K n n d y T C T l P n t S t a t u s f R d u m
T l p v J f d M f l 9 9 30

T h f i r s t c l i n t h e a u t h s p i n e t h a t t r t l i n t h l m b e t n A u g u t 9 4 n d D e m l e t O t h e e e c s e s f l i g n S e t v t f t h e p a t i t h d m p m t l i s u n p r o v d J t l l n l i n g l s u l t s r l t d i a n l m j e m n t n 3 R p t e l l e t l e a t r f t h l e t m h h l l u r e l i t g t r e e o l t l I n n p e b l r f t h t r t h t r e m e n t s a l m s t a l s t o l l e d b y m k l i m j e m n t T h e r e a l e n i n g o f t h e l h k a r r t f h m r g e l l e f f m p a n l n q u i t a n b e f a s e l m l l u r e u l e t l t j e r t r c e n t u a l l y p r o d v e y o f i c t o v b u t n f h h d e t l e l a o u n t s a g i t h e p t e n t s b e c a m e p r t l v e l l J t e t s t h c e r f t h e t u m h c o m e f r t e n t n a r l l f r e m t a s t a s i u r s u a l l y h a b d c h f o l i f n d l e f e f e q u e n t l y m c h p r l n g d A n u m b e r f a o f e p i t e l m a o f t h e k n n v h c h g l s u l t s r e o b a i n e d a r p t e d b e l f y C n c o f t h b u c l a n d l n u a l m y s m e m b e r e r t h e r e f a c t v t h e u l t b e n g n t h h o l d r p t u n g

O f b e i n n d t o n s t e r n e f i b d y i l d e f l y t d m t e a t m t H a m h g e c p r t c a l l y a l v s b i t p n d a n l t h m a j i t y o f n t a n c t h e e s m k e d d m n u n t h e s i z e o f t h e t u m A t y p i c a s e c i t d t i l I n a p r o m k e l o d n e i d l p u s t h m a t o s d u m s o f b l i s h e d a l e T h e p t i n t s t h e p l t h m c g t e r e t a t e d w i t h f o f t h e n r v e n i b e t s y m p t m s

I n c l u n t h e u t h r q u t e C u l l e f o l l A t t h p s i t t i m e e k n o f a t l e a s t t h r e e g o d t h g s d m h s d o n e i t h a s p p a e t l v c u e d a p e n t g e o f s r l l n p e r b l e c n a d s r c m c e (2) i t h a s p o l n d l i f e n o t h e r s (3) i t l l e v d p a n a n d d e a y t h o r m i t g a d d i t r e s i n g d i s c h e s n o t a f I n o t h o r d t h s d e n g h t m a k e u f e l t h a t e u l d a t t o h e i t t r e d n n y m m b e f u r f m l y t h t h a d a n s o p e r a b l e g r t h

T u n r D N t n R a d u m T a t m n t E d b
M J 9 9 0

I n t h t h o e x p e i n c e r d i u m t e a t m t h a b e e n f n i c s s t n l v u e f u l e o p h t h l m j g o t e I n u p w a d f s o p t i e n t t h u s t r e a t e d b e n e f i t

a s d e r d b y a l l e x c e p t o n e M a r k e d i m p r o v e m e n t s s h o n n t h e i r g e n e r l c o n d i t i o n a n d p e l v m p t m s l t h o u g h u s u a l l y t h e g l a n d d i d n o t d m i n h n i z e a n d t h e e o p h t h a l m o s a s a f f e t e l l u t l t l e F r o m o o t 4 o m g h o u r p r p l v e c e l e r e g i v e n o v e e a c h l b e t h e t h m u l t h t h m s C o m p e d t r o n t e n g e n t h e a p v i u m l s t h d a n t r e o f g e t e r a c u r f d s g e k a t e r p e e r t r o n o f i t r a y s a l n a a i d q u i e t n t s a p p l c a t o n

I n l i g n a n t d s a e d i u n g e n e r a l l y o f b e n i t m t i m e p d c i n g p a r e n t c u r e s a r n s p e c i a l l y p h o c m a a e m o r e i m t l t h a r c n m a s T h o s e n t h e s u r f a c e o f t h e l d y d n t h r v a r e m o t f a v o r a b l y t t e l f u c f l t e m t n T h e b u c c a l t y t h p i a t v p a e s e x p t i n g p e h a p s t h n a l e n t h e l g t e g a a g e s a n d i n t e r n a l g a n a e u n f a o f l e p s i t i o n f o r s u c c e s s f u l t i m t t h g t h m u s t b e l o a d a n d a c c e s s i b l e a n d t h h e l g o t h m u s t b e g e n a s u f f i c i e n t d e s e I t s t h e a u t h o s e p e n c e t h a t i n t h e a j r t o f m e r l s u t a b l c s e s o f m l i g n a n t d e s t e t d b r d m t h e p a t i e n t s g e t e l l t e m p o r l y t h g h t h e y u l t m a t e l y d i e o f r e n c e a n d m a t a t e s R e u r n e s a f t e r p r i v a d i a n t t e m e n t e u u l l v e y e f r a c t y D i l a t e d h t i s e g i n f c a s e o f c h o n d o n b y o m a f t h t r u m m y e l o m a o f t h e s u p i r n a i l l y c u r r e t s r m a f o f t h e s u b o r t a l g i n p a o f d m i x e l c i l t u m s a r c o m a o f t h e s a r m e u r r e t a l e o m a n t h n o s e r a p i d l y g v n s f u g t n g e p h t o m a o f t h e v a g n d s a m i f t h c e i x I n a l l o f t h e s e r a d u m p u c e d m a r k e d b e n t s t h e d u r a t o f h c h d

R a d i u m i t n s e e f u n d b e n e f i c a l a l s o n t h e t r t m e t f k e l o d n d o l n t l e r s p e s i s t e n t s i n s n d t h e r l c o n s a o c i a t e d i t h l c l m a l n u t i n a d c h r m c p A c c o f k l d o f t l e k h h d b e n e p e a t e d l y e c e d r e m a i n d e l l a f t e r s u l e q u n t a d i a t i n A n i n d o l e n t o e n t g e a v u l c e r o n t h a t o r s h d a s r e m l b o n e p p l i a t n o f o n g h o u r f a d i u m

INDUSTRIAL SURGERY

S t a t J C B k I n j u r s n d T l e i R l a t i n t o
t h W k m n s C o m p e n a t i n L a \ l
M J 9 8 0 8 3

O f a l l t h e n y u e s u t i m e d b y o r k m n n e a r e a s g u e d a s d f i c u l t t o d i a g o e s n y u r i s o f t h e b a c k F o m i n t n i t b e s t t o h a e t h e p t e n t t p c m p l i l n o t g h o h e u n d r e s s a d m v e a b o t a n d h i s a c t i o n s h n h e b e l i e v e s h i m s e l f u n o b e d A l l h a c t e s t i c a t t i d e s s h o u l d b e e f u l l o t d s n e n t h e p e s e c e o f p a n n a t u r e a l y s l m n l e s t o f a p a r t a e l l s p r t e c t n t h e m u s c l e b e i n g u n d e r t e o n t o k e p t h j o i n t q u e t R d i o g r a p h y p l a y s a n i m p o r t a n t r o l e n t h e a t d i a g n s s f b a c k j u r i e s t b g m a k a b l e

how often spinal fractures are found to be present in this way when there is little or no clinical evidence.

The most frequent cause of pain in the back is lumbago which is very acute and manifests itself when the patient rises from a stooping position. It is usually unilateral, relieved by pressure and aggravated by movement. It generally yields to treatment. Before making a diagnosis of lumbago other conditions which might cause similar symptoms should be eliminated. Lumbago usually follows a sudden sprain or slip while carrying a heavy burden. The accompanying pain is definitely localized. Strained back, another frequent cause of lumbago pain, usually results from overtaxing the muscular tissues beyond physiologic limits as in excessive or too sudden work, especially when applied to already fatigued muscles. This condition is best treated by absolute rest and light massage. Adhesive strapping of the back relieves much of the pain.

Rupture of the muscles is rare but may result from the force of opposing muscles suddenly brought into play. Contusion of the muscles results from force or violence applied externally, especially when the muscles are in action and causes an effusion of blood into the injured tissue. Straining of the ligaments is produced when they are subjected to severe pressure or mechanical movement which tears or over-stretches the fibers and usually results in an effusion of blood into the joint or surrounding tissue with consequent pain. Bone pain if continuous is generally due to bone disease such as ulcers or tumors. Sacro iliac sprains due to severe falls are not very frequent. The symptoms are localized pain on pressure and increased by walking, sitting or rising. The treatment consists of rest, strapping the pelvis, hot applications and mild massage. Back injuries involving the coverings of the spinal cord result in the gradual onset of paralysis from the hemorrhages that arise and the corresponding symptoms which slowly disappear with the absorption of the blood. Involvement of the cord results in immediate paralysis which is more or less permanent. In spinal fractures there is often an absence of symptoms beyond pain and some stiffness provided the cord is not involved. In dislocating fractures in which the cord is involved there is a definite corresponding paralysis of the nerves passing through that location. Cases of railway spine present no pathology, the symptoms appearing several weeks after the accident without any clinical signs and persisting until litigation is ended. Weakness of the back, a common complaint, is purely a subjective symptom. Stiff back may arise from pain in a muscle, ligament or bone or be due to muscular spasm or structural changes.

The writer concludes that in examining painful backs in patients suspected of malingering it is advantageous to mark the spot indicated as painful with a blue pencil and then ask the patient to localize it again after distracting his attention. If he is malingering the second spot will generally be a few inches away from the first. Another method to trap

a suspected malingerer is to exert pressure over the alleged painful side while inquiring as to the presence of pain on the opposite side. Since the Workman's Compensation Law has been in effect more back injuries are treated than before.

HARRY H. IREILICH

HOSPITAL MEDICOLEGAL AND MEDICAL EDUCATION

Owen W. O. Teaching Surgery by the Moving Picture. V. I. M. J. 1919, cix, 29.

There are at least three varieties of moving pictures each of which has its own advantages when taken at the normal rate of 16 to 1 second and a fourth by slow or rapid take. Up to the present the most common method is the one in which the operator is taken with his patient and assistants, the 16 to 1 or old style. Often however the blood blocks out the field, obliterating the essential steps. An other method, less well known, consists in taking the picture on a background and floor of 4 inch squares which appear in all portions of the field at all times. A clock which is seen in the field has no escapement since this might interfere with the accuracy of the work, the fraction of time involved being very small. When further developed this method will be of particular value for the examination of spasmodic seizures, limps and reflexes. For teaching purposes the third method, the so called animated diagram type of the Mutt and Jeff pictures is the best. In this kind of picture the successive operative steps from incision to closure are shown in every detail being clearly outlined. This method is adaptable to any field of medicine and surgery.

HARRY H. IREILICH

Roux Berger, J. I. The Teaching of Surgery (L'enseignement de la chirurgie). Presse Méd. Par 1918, VIII, Supp. 837.

Roux Berger refers especially to the teaching of French students. He believes that great reforms are necessary in the teaching of surgery. Reform in teaching is all the more necessary and urgent as he thinks there will be an enormous number of foreign students in France in the future. At present only the student who is an interne can acquire enough surgical knowledge to become a surgeon and his teaching is haphazard and without order. Surgery is the only trade the exercise of which does not demand a previous apprenticeship.

The teaching of operative surgery in schools is quite inadequate to the requirements of modern surgery. The very essential parts of every day surgical manipulations such as scrupulous repair, the necessity of respecting tissues in handling them etc. are not taught.

The time necessary to teach practical surgical operations to the student must not be obtained by lengthening his student course but rather by reform of the present course. A good deal of time is occupied in teaching routine matters which might be

dopped There oom f more rap d teach ng
n manv branches of m dic e Those ho des e
n spec al e in s gerv should m mence in their
student days and shape their c u s c c o r d n g l y
It should comp ise th opportunity f carryin out
operat ons on anum ls under r g o r u s s s e p s
and all the u a g e s f m o l n s u r g c a l p c t i c e
Laborat ries f phys i o l o g i c a l r e s e a r h i c h the
surge can n longer do w thout should be avail
abl

But the b st theoret cal su g i c a l t e a c h n s t u d i e s
on cad e r s a n n l e p e m e n t a l u g e r y o
matt r h o e l l o r g n u e d i s n o t s u f f a t u l e s s
at th same t m e th r e i p c t c a l t e a c h i n g o n the
living p t e n t A t p s e n t the student p t i c i p t i o n
in h p t a l t e n e and p a c t i c e i s q u i t n u s u f f i c i e n t
It i t m t h t a m e d i c a l s t u d e n t n v n o l o g
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doct s d e y e e i t h u t h a e e s t a n
l a t e d h e i n t r l h r m h a g a l a d i
r u s h d l i m b h c h t h e n e t d v p r c t i n
h m a y b e a l l e u p t r e t

L r s u r g e n h i s i t h h i f a l s p i t a l
h a s n t l i t e g h t b u t t h d u t y t o t h
T h i s a n h o n o r h i c h n g n h o u l d s h i k
T e a h g u g h t n t t o b e c o b l t o t h f l
h o o l p o f t h e c e p l t y o f m e n f d l y
t a b l i s h e d r p u t a t o i s d t h e n k h
h u l l p r t p a t e n t h e t i n g h i s g v
W A B s

O l n G W H o s p i t a l L g i l a t i n M i n n t
J L t 9 0 0 4

Legallv h s p i t a l a r e i t k n l t h o r g a
l f r p n t l t h s e g a n l f c h t y T h c
l t t e h a n f i l t k a n d l f t h r i p t y
i n m d n t n b e q u e s t m u l t u l f t h e
c a f d s c k i n e e d y T h a r m p t f o m
t t n f g e n e l p p o e l u d n g t f o
t e t m p r e m t a n d b t t r m t s l o r t h

p a s s a g e o f t h W o r k m a n s C m p e n s a t i o n A c t
h t a l l e h o p t a l w e c n o t l a b l e u d e r c o m m o n
l f o r t h n e g l i g e n e o f f i c e r s o r e m p l o y e s T h
p a s s a g e o f t h a t e n d e r s t h e m l i a b l e f o r i n j u r i e s
i n c u r r e d b y t h e e m p l o y e s b u t t h e y r e m a i n e e m p t
f r o m l i a b l i t y f o r n e g l i g e n c e t o w a r d p a t i e n t s a n d
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t o g e l t a t o n a d a r e l a b l e f o r n e g l i g e n c e
t o p a t e n t s a n d v i s i t o r a s w e l l a s t o e m p l y e s T h o
b a d f e a t u r s o f t h W k m a n s C m p e n s a t i o n A c t
c l a t d t h o p t a l a r e t h m a i m u n t a l l o a n c e
f \$ 5 0 0 f h o s p i t a l l i l l a d t h e s o f n u s e s a n d
p h y s i c i a n s a n d u g o n a n a m o u n t h i c h i n c e s
f s r u s a n j u r y i s h l l i a l e q u t e a n d t h f a c t
t h a t t g i v t h e m p l o y e s t h a b s o l u t e r i g h t
t o d e t e r m n t n l y t h e p h y c i a t o b e c a l l e d b u t
a l s t h e h o p t a l t h i c h t h e p t i e n t s h a l l b e s e n t
L e g i l l y a p t i e n t m a y l e a v e a h o s p t a l w h e n h e
p l a s a n d p y h e n b e p l e a s e a n d c a n n o t b e p r o s e
c u t l T h h o p t a l h a n o l i e n o h s b g a g e o r
p r p e t v u l e s l h i e p r e s s c o n a c t

W h e n p t i t h a n d l a v e s m o n e y j e w e l r y
r t h e r p e r t v i t h t h e h s p i t a l t h e s a f e s t t h i n g
f t h e n s t u t n t o d t h o l d t u n t i l a n a d m i n
t r f r t h e l e e l a p p o i n t d I t h o u l d
t h b g c n t t h l a t o n l y a f t h e h a s p r e
e t e d a t t i l e p o f t h l e t t e r s f a d m n t r a
t I f c h p p e r t v t n d e r t s o m e p e s o n
h n t l l y a u t h r e d e c e e c e s t t h e h o
p t a l m a y b e l l i t o c t

I t f t i s l e a d n e s a r y t o r e q u e a
g u a t f t h p t i e n t c a r e n t h e h s p i t a l f h e
u l l t o p y l v t c a n t b e t a k e n s a
h a i t y T h a t e e s h o u l d b e i n w r i t i n g
n l n d e r a t n e c p r s e d A n o r l g u a n t e e
g l l f e t h e i c s r a n d e r l b u t h a s n o
l l t i n g a f t r l C o n q u e n t l y i t b e t
t l t t h r i t t e n g u a r a t e e f m t h r e p o n b l
p o n t p r i t t h e t m e t h e p a t e n t i d
m t l t t h h p t a l H H J K s

MILITARY SURGERY

N — R d f d t t h T b l f C t t f t h t l d t g t h m l t r y s g y h u h p
p d t h h d d a t t m l m t

M c M u r t D C T h H t o c a l D l p m n t o f
P b l i c P i n t l D i b l d S l d i
I t t M J 0 0 9

I n a n e t t m e a d p t t h e e n t e e n t h c e n t
t u v t h d a b l e d l i e r s a t t h m o t p a t d e
p e n d t o n g a r e c h a t v c h i l l y m o n a s t i c

F a n c e v a t h i r t E u r o p e a n c o u n t v t o e a b l
l h h m e f r m n d b l e d s c e T h e H o t e l
d e s i a l d s e s t a b l i s h e d b y L u A V a s s u p
p o r t e d b t a t o n t o a d l t e r t h r e e d e n i e s
b e g l e d e e y l e s p t b y t h e g o v e r n m e n t
f r m l i t a y p u r p s e s I n t h e t w e t y e g h t y e a r s
b t w e e n 6 7 6 a l o 4 5 0 0 0 o l d e r s a p p l i e d t o
t h i s t i t u t i f o a d m i s s i o n S s t s o f C h r i t y

c a e d f t h e s k I n s t r c t i o n n a t d e v t h t h e
n e c e s s y t o l s w s p o v e d b y t h a d m i s t r a t n
f o r t h o n e t e d

T m a i e d i n m t p e r m i s s i o n v a s g r a n t e d t
i t t h e r f a m i l i e s u c h p e r m i s s i o n g r a d u a l l y
d e v e l o p g u n t o 3 y e a r l e a s e s o n a n a l l o n e o f n o t
l e s s t h a n 5 0 0 l i v r e S o o n t h e 3 y e r l e a v e w e c
e x t e n d e d n e d h e n t e l y t h a l l n e e s a u t o m a t i c a l l y
b e c m i g p s i o s t h t h e r s u l t t h a t 1 2 7 0
n a d i s i n t o t h 3 0 d i s a b l e d m e n i n t h e H o t l
p a s s i o n s v e e p a i d t o 6 0 0 0 s o l d e r T h s i n
F r a n c e t h e t o p r n p l e o f i n s t i t u t i o n a l m a d
p e s o s — p r c p l e s u l t i m a t e l y a d o p t e d b a l l
t h e v e t e r n n a t i o n — c a m e t o e s t s d b v l

and revised and regulated were operative when the war of 1914 began.

In England the first steps for the relief of soldiers were taken by Queen Elizabeth for those invalided home from Flanders. During the time of the Commonwealth Parliament provided for pension grants, hospitals and homes for soldiers who had been disabled fighting for Cromwell.

In 1682 the Royal Hospital at Chelsea for disabled soldiers, which was to be supported by money compulsorily deducted from the soldiers' pay, was begun. The same year saw the beginning of the Greenwich Hospital for disabled seamen. Both institutions were completed under the rule of William and Mary.

Early in the nineteenth century Parliament passed an act granting pensions to all soldiers who were invalided, disabled or discharged after from fourteen to twenty-one years of service. At the close of the South African war this system of relief was extended to include widows and orphans of those who died in the service.

No nation has hitherto been so generous in its provision for disabled soldiers as the United States. The Massachusetts Colony passed its first pension legislation in 1636. Other colonies soon taking similar measures. A few months after the beginning of the Revolution the Continental Congress declared that half pay would be granted every officer, soldier and sailor incapacitated during the war.

In 1792 the first general pension law was enacted providing for the payment of \$5 and later \$8 monthly to all privates and non-commissioned officers. This system of relief with slight revision continued down to the Civil War. During the Civil War the principle of fixed rates for specific disabilities was introduced.

In the United States there are now more than 30 soldiers' homes supported by the several states. In some of these the wives, mothers, widows, sisters and daughters of the beneficiaries are also maintained. The inmates of these homes number about 11,000. There are also two Federal institutions caring for between 18,000 and 30,000 men.

A. E. DUDMAN

Bryan R. C. Surgical Conditions in the Great War. *Am. J. Surg.* 99, 131, 7.

The writer discusses briefly the many methods used in the treatment of wounds and other conditions due to the war.

The Carrel-Dakin method of wound sterilization, which he states has proven most valuable in skillful hands and is the greatest advance in scientific reparation, is described in detail.

As regards anesthetics it has been found that the lightly wounded are good subjects for gas-oxygen, which in such cases is preferred. When not available, however, ether is given. Local anesthesia is used in only a small number of cases. For the seriously wounded who show signs of shock, spinal anesthesia has been urged for all injuries of the legs

and thighs. Patients in profound shock should be supplied with hot water bottles or given a hot air bath before being operated upon. Morphine is prescribed generously and the gas-oxygen administered by an expert gently and smoothly. In the case of those suffering from a serious degree of sepsis, especially anaerobic infection, gas-oxygen is again the anesthetic of choice. Spinal anesthesia, warm ether vapor and intravenous ether are also recognized as being comparatively safe. Chloroform should at all times be avoided.

Shock must be treated immediately by the application of external heat and stimulants. Fluids are best given by mouth or rectum. Burns from explosives, saprophytic and gasoline are treated as in civil practice. In regard to trench foot, emphasis is placed upon the importance of a layer of air around the foot and leg, in preventing the condition. Among other preventatives is a light oil silk bag which was devised to be worn by those who were obliged to remain for long periods of time in the slush and mud of the trenches.

In the treatment of gas gangrene the end results have been greatly improved by excising through the opened wound the devitalized tissue which produces a nidus for the development of the gas-producing organism. When gangrene appears in the muscles or muscle groups actually wounded, the treatment depends on the patient's condition. If this is good, the wounds are freely opened and the affected muscles or muscle groups are removed. If the patient's condition is bad, amputation is the safest course, even if the gangrene is localized in certain muscles. It is seldom possible to save such a limb when the bone is broken.

One successful suture of the heart has been reported. Lateral suturing of both veins and arteries has been done in a fair number of cases. In two instances a lateral rent in the vena cava itself was closed, although the only successful case of such repair was one in which the sides were brought together by artery forceps and not by suture.

In the treatment of injuries of the joint, the first advance was the abandonment of intra-articular drains. The next was the excision of the wound, the removal of any foreign body, the flushing of the joint and in some cases the closure of the capsule and the insertion of a superficial drain.

The treatment of head injuries is outlined briefly as follows: Primary cleansing of the wound, transmission of patient as soon as possible to the hospital, the taking of X-ray pictures, incision of the scalp and bone wound, a limited and careful removal of foreign bodies, the covering of the exposed brain, the closure of the wound with superficial drainage, prolonged rest in bed.

The practice in abdominal wounds is to operate on all patients unless there is some reason to the contrary, and to operate on principle rather than on the indication by symptoms. Celerity is of great importance. Solid organs should not be disturbed any more than is absolutely necessary. Abdominal

d n ge thought to be of little se x pt in lo l
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C se t un h t l t j l l k
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ol f up t m idl th l l Circular flap incision
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l d t i t o f j nt) Un p c tel ham r h rige
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t t t l g t ion Approach made through
t l poplit l p t n l the v sel l gat l b e
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C 4 Sl p l d n ntecub tal reg o
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l n ne e hid l e i l v idel End of ve sel
hg d l l r e v ture don ftr approx
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t t l l l lly e m t b f th t t y p
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f m t r f th l chlori l r i t chloroform s p t s
nd the 4 pt th ou l a cotton covere l h le
in a f e mask f led slk It is effect e in ne
m nute and quite similar to the ether rausch
f c v l pract En M Mlt

GYNECOLOGY

UTERUS

McArthur A N A New Operation for Uterus Bicornute *Med J A st alia* 19 8 11 510

The author gives the history of a young woman twenty nine years old who had suffered intensely for years with dysmenorrhoea in spite of much medical treatment and one surgical operation for the relief of pain.

Upon examination McArthur found two cervixes but the vaginal septum had been removed at the previous operation. The right and left bodies of the uterus could be made out by abdominovaginal palpation. Believing nothing short of further operative procedure would be of any benefit the author devised an operation for the conversion of a bicornute uterus into a normal uterus. It consists briefly of the following step:

1. Bisecting each cervix and suturing the outer two halves together giving one cervix.

Through an abdominal incision the two bodies of the uterus are incised down to where the cervical excision ended. There are now two halves of one uterus instead of an intact bicornute uterus. Suturing together these two halves results in the formation of one uterus.

One year has elapsed since this operation was performed; the patient has menstruated without pain each month during this time.

The author remarks that this method can be applied to any bicornate uterus no matter whether of equal or unequal size. A better uterus can be built up by a little intelligent plastic work than can be done by simply excising the smaller cornu. Besides both ovaries and tubes are preserved and their position becomes a normal one.

H B MATTHEWS

ADNEXAL AND PERIUTERINE CONDITIONS

Green R M Types of Tubo Ovari in Suppuration and Their Treatment *Boston M & S J* 919 clxxx 19

From the author's personal experience suppurative disease of the tubes and ovaries may be very conveniently divided into a series of clinical types in accordance with which the treatment is most easily determined. It is with the differentiation, description and illustration of these types and their therapeutic surgical classification that this paper is concerned. The conclusions drawn are summarized as follows:

1. Tubo ovari in suppurations may be classified into definite clinical types according to the infecting organism and the route of natural escape pursued by the accumulating pus.

2. Treatment should be determined in accordance with the type of case, palliative depletion being always first employed.

3. When such palliation fails within a few days to effect relief of symptoms and subsidence of fever deep suppuration should be suspected even in the absence of fluctuation. On reasonable assurance of its presence an exploration should be made through the appropriate route.

4. The likelihood of rectal or inguinal pointing should not be overlooked when the more customary vaginal pointing fails to occur.

5. Rectal or combined recto vaginal examination is of value in determining by which route pus in the posterior pelvis may best be reached.

H B MATTHEWS

EXTERNAL GENITALIA

Deavor T L Artificial Vagina Its Construction Brief Foreword on Anomalies of the Genital Tract *Internal J Surg* 1919 xxvii 33

This paper discusses briefly the origin and classification of the anomalies of the urogenital tract and gives the various steps in the technique of the modern operation for the construction of an artificial vagina.

The male and the female reproductive organs have their beginning in the same embryonic tissue. Very early in fetal life the wolffian bodies appear one on either side of the spinal column. The many tubules of which these temporary structures are composed then converge to form a single outlet, the wolffian duct, which approaches its fellow of the opposite side and empties into the urogenital sinus. When development has proceeded further and the wolffian bodies are no longer needed, the ureters are developed. Shortly after the formation of the wolffian ducts two small elevations, the future testicle or ovary, arise on their inner aspect. About the same time the mullerian ducts originate near the anterior extremity of the wolffian body, passing downward to the urogenital sinus. At about the eighth week their lower parallel halves fuse to form the uterus and vagina, while the upper ends form the fallopian tubes. In the male these mullerian ducts form the prostatic utricle. The vasa and the epididymis are developed from the wolffian ducts, the corresponding female homologue being the paroöphoron. Not until the lapse of twelve weeks however is it possible to determine the sex of the embryo by the external genitals. It is evident therefore that while the wolffian ducts are developing into certain parts of the male sexual apparatus and the mullerian ducts into those of the female there comes a time when one set of these structures

mu t y eld to become a mere homolog. hil the
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n t t t n al bett rm nt Bv r rel t ly light
op r t f r s t ally l v l l t l v d
f i t h m l sm t nd g v n l t t u

Ce nd any f i t m h h a l t t m
pr vem t l t h s al d f u t o n al ep f d
h y r p h l l o i n d e s c n l t i l d
m p l t e l s e n f t h a g n

It t l t l s t m e t i n e d a n m a l y t l a t t e
m a n d of th p a p d l Th uth t t e
t h t p a t o n f the corr t n f t h d f t
d i r r d the g o u n d f n t m t t s t g
f a t r p e n t t h e m l e O e t h a t t h u n d
o f o m a l m e n n e p r e n o r g m a n d
t o t h a t a s m y m o r e e v e r n Th e f r e
d f o m i n g t h m t u l f u n t t h

g s the m e h a n l a l m d u m of a n b i a l
e l a t o h p To c t e t h a l n h r
n t h f a i l d t o d o s o m s t o l
A t l a g n s a c l a p s l l t u b t h t l l
n n t a c t m o t f t h t i m t h l n i n g f t h e
v a g u r m u s t b m u o a d n t s k i r m m l e l
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d u t i n l h t s t p s t l e f o l l e l t e a n g
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l p a r a t o t h f i e t S l l p a t n t s
a r n h b t t e b y c t t h o s e h o a r e
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F a u s of t h g i l t t A t a g t
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a g t a m p a s e c u e l i n t h e g i n a l e a
3 L p a r o t m y d d t m u n a t n f f u r t h e r
c u W t h t h a b d m p e l t h u t e l l

b e f o u n l r u d e n t a r y o e n t i r e l y a l s e n t A d o u b l e d
p o r t i o n f t h e l e u m p r o l a l l y t h e b e t t i s u e t
u s f r t h e c o n t u c t i n o f t h e n e v a g i n a s t h e
m s e t e v o f t h e l o o p n s a f e l y b e p l c e l i n t h e
d e p t h f i t h p e l i s n d t h f n b e l v a g n a m o r
d e q u t e s t a n d h a s e r y l i t t l e t e n d e c y t
c a t r a t

4 T o f p r o p l o p a l l o s u e o f i t s
t m t e s Th s e l c t h a g l n m a l e o f a
p r t n f t h l u m n e t h e x u m v i t h s u f f i c i e n t
m s t e v t p e m i t t h e m i l l e o f t h e l o o p t o r e a c h
t h a m l o f t s y a c h s r r e c t e d a n l
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f o r l l v a l m b e r t u r
5 I n t t n a l a t m o i l h a t h r c l n e s
t h t l t r a l a s t m a l e i n g m o r e a c e p t a l e
f m v t n d p i n t a n l m s t g e r a l l y u e d
6 O t n n o f t h c u l d e s a c r l l o d g m e n t o f t h e
n t a l l p A s t r o n t r a t n u t u r e h a v n g
b n p a d t h u g l t h e m e n t e c l o s t o t h e l e l
t t n l p t a d t h e d b o u g h t t o g e t h e r a n d
l a m p l g n l p u n t u m a d e j t l l t h e
r u l m e n t v u t u s d f r l v e n l a g e d c a e l e i n g
t i k n n t t i n j e t h e u r t e s o t h e u t e r n e a r t e r y
Th a t a n t t c h t r a c t n s u t u e i n t h e
f e p t h e v a g n a l t a c t a n d m k e p l e
t r i o n h i l t h e o p e r a t i v p e c i a l g n t l e m a n p u
l a t n s o u g t h n t r a c e o f t h e l o o p i n t o
p t i o n C a m u t l s e d n a l u s t n g t h e b o e l
a n d t h m e s t e r t o t h n p o s t n f o r h i l e t
m y e m t h t t h e p l e n t o f t s u e w h e n i t i s
l e t h o u g h t b l o m i n a l n i s o n t h e l s t a n c e
t o t h e v a g n a l u t l t g a t e W h e n t h e i n t e s t i n e
a p p e a r t t h e u l a t g r e s p e l a n l h e l d i t h
p i e f g u z I t m a y n o t b e f e a s i b l e t o c r o d t h e
c l o t n l o f b v l n t h e g u n l t r a c t b u t t h e y
s h u l d b s u t r s h s a s n o t t o v t e a d h e s i o n s
T h e m e s t e r y s h o l l c u p v t h l e s t p o s s i b l e
p l a t h e p e l a n l l l g e s s h u l d b
e f u l l y d p o e l o f I n t h e g i n a t h e m e s e n t e r y
l e s o n t h p o t e l l v t h a p r t i o n f t h e
n t s t i n e a l e d t e i t h e s d

D r e s s i n g o f t h e p e r t o n m a n d s u t u r o f
o u n d l h b l i n l i n e o n i s n o t s u t u e l u n t i l
t h e l o p c m o r t e s t e l t o s e e t h a t s i t i n
p p o t o n n d t h r n u d u e t e n s i n A f t e r
t h p e r t o n e u m h b e n d r e s d a n l t h e o m t u m
e p h d t h e a b l o m e s c l o s d

8 C o m p l i t f t h e k o u t s d e I n c c l u l
s t h s p e t o t t l l t o k e e p i n m d t h e
c o m t e f l e c t s e l l t h e p u p o s t s d e s i g n d t
s e r c W h n t h e b e l h a s b e e n o p e l a d i t
n t n t e m d t h g u z e t s c u t e d g e s a r
n t l v s i t h e d t h e n o f t i s s u m a d e r a l y
t h t s t s p o f t h i s p r t i o n T h i l e s h o u l d b
a t t h e n m l l c a t n o f t h e h y m e n T h e w
d u b l a g n a s t h e n f i l l e l c o m p l t e l y i t h s t l
g r e T h p n e m s c l a n e l t h o o u g h d a
n o s t l h l o d l e a g a p p l i e d T h e u s u a l p t
o p e r a t e a r f l o e l A b o u t t h f o u r t h d a y
t h a g n a l g a u z e l l b e l o o d s h o u l d b r
p l a c d b f e s h t r a m p n K e e p i n g t h e g i n a

well distended for one week aids greatly by allowing a wider area of attachment. During the second week warm saline douches are given very carefully. After the second week a long clamp is carefully applied to the vaginal septum for its destruction.

Any irregularities in size or band like constrictions about the vaginal wall are easily overcome by pressure. It is rare that post operative dilatation is required but these patients should be urged to return at stated interval for inspection and advice.

C. D. H. LIME

MISCELLANEOUS

Brown, G. Van A. *Problems of Ureteral Surgery in Gynecology.* *Am. J. Obst. & G.* 1919, LXIX, 9.

Injuries to the ureter during operation are fairly frequent and when recognized at the time should if the condition of the patient warrants be immediately repaired. Too often however these accidents occur when the patient's resistance is much depleted by the ravages of disease added to which is the shock of a major operation in which case one is not justified in prolonging the operation unless the injury is slight and located at a point where repair is easy. As a rule repair is not easy in fact good judgment and ingenuity are called for in this field of surgery. The problem of transplantation is often puzzling and removal of the kidney may be necessary.

The order of frequency in the usual injuries of the ureter is ligation, clamping, kinking (by ligature or clamp), incision (partial or complete), resection of a portion of the ureter (accidental or designed), and interference with the blood supply which leads to necrosis.

The results from closure of one ureter as well as from obstruction due to calculi in the urinary tract

vary to all extremes. With one ureter closed there may be no symptoms whatever or it may be followed by toxæmia and death. The extremes of end results in obstruction from stone in the urinary tract are well illustrated by the two cases which the author reports.

In operating there are four avenues that confront one in selecting the method of approach: transvesical, vaginal, transperitoneal and extraperitoneal, each of which has its special indications depending upon the location of the calculus. These principles however hold. The ureter should not be cut directly over the stone. The incision is made at a remote point and as remote as can usually be done. The stone is milked into the opening. The peritoneum is not opened if avoidable. If opened accidentally it may offer an excellent guide in locating the stone but should be closed before opening the ureter. The ureter is incised longitudinally. Suturing the ureter is not necessary since repair is rapid when the tube is not injured transversely.

Before attempting the repair of a fistula it is often better to wait for a time and see if the leak will not stop spontaneously. The probability of spontaneous healing can often be shown by noting a diminution in the leak and determining the location of the fistula. A review of the operative work done will frequently suggest the probable location of the injury. The exact position is not always easy to determine. A vaginal and cystoscopic examination supplemented by indigocarmine will usually give the desired information but these may be supplemented by the X-ray. For obtaining a cystogram or ureterogram the solution opaque to the roentgen ray which is chosen should be either sodium or potassium iodide 15 to 30 per cent.

EDWARD L. CORNELL.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Funk E H Tub I s and P gnan y M d
Cl v l 9 8 8 3

l k l scu ile slue i l l i l p
f t l e culosis a l p g n l l t t n g h l
n th i v e p r i T b e cul i t
nfr quently tel th p unc l i th
comb ton f l l n o d h t l j f
a tion b f m l t d Amoig oo n ed
m th pulm a t t b uio l t
st tel th t h t t gns i the o d t n t t
l r g f l l k t p g l t
p b ble th t m v f th p t i t h f l n n t
tube cul l h h c i d t i l y the
p g v l h f e u e f l t h i t b
l n g c f l l l l k k e
h gh

The m j o r t t b f th t th t
p r g n v and p r t i t n h t n th t u l c l u
p o b y l o n g t e t v l t v l l
em t g t f f t n b th ole t
resp r t v m t t l e l u l b
m t n g

Sterility u omm p t t th pulm v y
t l e r u l s i c n e p t o n s f j u e n t l n
dvanced d s Am oot b e l o u p t e n t
8 8 p e r c e n t h a d m u i g e l h u t h l l
t h t t b e c u l s o m e n h o u l d b e s e l g n t
m a r r i a g e a n d c o m p o n u l e s s t h e l i b n
c u r e d t h p t e n t h b e f e e r m l c a l
a n d c o n t t u t i o n f v m t m f r p e r l f t
o t h r e e j u n d e d a y n d i t f l f e

If c n e p t o h i t t h e t u b e u l l e s
i t h e e a r l y d i c t s t a g e t h p g v h u l l
b e t e m t e l i f t h i n t g n b e y o n d f o u l
h a l f m t h T h p t e n t h o u l d b e p u t i d n l
f n t h p n f c h e t t e a l t h l e
p s k l l d b s t e n h h l m p t y t h
u t u t h a l l i t e m a d h o k s p s b l
L t h e r s h u l d b p h i b t d a n e t h e c

If the tube u l e s i o n the e a r l y t g d
i n a t v e t h e p e n n s h u l d b e a d n u n d e r
t h e l s t h y i e n c a t h r s t l e t e t S h u l d
t h e p o c b e c m e c t i h o a d a c t a t
m i t u n t e d I f t h e l e s s t h e e l j
c t i t e g e n d t h e p g a n c y b e v i t h e n d
p n t i t b e t o r v t h p a t e n t r e l e t
t e m b e f o t e m n t i t h p e I n l
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t h e n e b n b a b r f q u t l q u t e h e l t h y
C o n g r a t b e c u l o i s c p t o l N u s i n g b y
t h e m t h e h u l d b e p r o h b t e d I f p b l e
h e a l t h y v e t n u r s e h o l d b s e c u r e d o r a t f i c i a l
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l t h l k f t l n o t h s l n d s b y i n f e c t i e
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b s e a t t h t h R R c c i i n s t r u m e n t h a e
s l t h a t n t l n o n l o m a n t h e a r t e a l
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T h l a v l f t h i p a n c o f t h m e s e s t h e i s
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D u r i n n m a l p g a n c y t h e t e n s i n v a r i e s
l e t n g o d m

I n n m l l a l r t l e e i a n t b l e p h y s i o l o g i c
h y p r t u r f m o t 3 0 m m T h e r e
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f a t u s a d t h e p e s u e a t b t h A n a n t e p a r t u m
m a n m t l e t i s v y f e q u e n t l y o b s e r v e d
h i c h f t i l l f t h d g o s s o f a n e a r l y
s e t o f l b t t t s g n f l i n c r e s o f p r e
t u e l l

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t b l h n t f t h m a m m a r y f n t o T h e
c i t t e i t i n f l u e n c e d t h b y l c i a t o n
r t h o u t f l f o d l s t d u r i n g p a r t u r i o n

D u r i n l c i a t t h e b l d p r e s s u r e r m a i n s b e
t e e o o n l o m A f t e r t h e r e a p p e a r a n c e f
t h m e n t l f n t o a t f a l l t h a t r e a c h e s t h e
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T h r e f u l s t u d y o f t h e p h y g m o m n o m e t r e
n t h e s c a s i l l g i v e s u p s g l y a l a b l e l a t a
f t h e d n a n l p r o g n o s i

I n t h e r a t o n t i a t s o f p g a c v a d t h e r
e r i m p l i c a t i s t h e s t u d y o f a r t e r i a l t e s n
f p i m v m p o n t n e B y a t c h i t h t n s i o n
u r v t h a t h o h a s r e p t d l y b e a b l t o f o s t a l l
e c l a m p s a n d a l l e l c o n d t i o n s s n e c t h b l o o d
m p t o m p p s e a l y a l m k s p o s s i b l e t e

prophylactic treatment. In the albuminuria of pregnancy a certain parallelism is seen between the quantity of albumin in the urine and the degree of hypertension. In albuminuria and eclampsia the data furnished are of special value in guiding the practitioner both as regards treatment and prognosis.

With the onset of labor in a patient with hypertension a very high hypertension is observed especially in the expulsive period. At times this may become so alarming as to indicate the necessity of accelerating or suppressing this period. When the pressure is very low the author uses digitalis and other cardiovascular tonics to increase it.

In pathologic puerperal cases hypertension is observed if there is or has been albuminuria or eclampsia while hypotension is marked in cases of puerperal infection. In the latter the lower the curve of tension the more unfavorable the prognosis. A progressive rise in the tension in the course of a slight or severe puerperal fever favors a good prognosis.

In the author's opinion the use of the sphygmomanometer should become generalized in obstetrical clinics. In this extensive article he has shown its many advantages. In the majority of cases with frequent examination of the urine it wards off eclampsia and will also guard against alarming albuminuria.

W. A. BRENNAN

LABOR AND ITS COMPLICATIONS

Wallace R. Scopolamin Morphine Narcosis or Twilight Sleep. *Ed. 16 M. J. 1909* Vol. 8

In this paper the author discusses in detail the use of scopolamin morphine narcosis in a series of one hundred and four labors, outlines his routine treatment for this type of management and gives his conclusions as to its value in these cases.

Before a patient is put under the influence of scopolamin morphine a complete physical examination is made. She is then placed in a quiet room with the blinds drawn and her ears are plugged with cotton wool so as to deaden all unavoidable noises. A competent nurse is in constant attendance. When the bowels and bladder have been emptied and the pains are regular and strong the patient is ready for the first injection of morphine gr. 4 and scopolamin gr. 1-150. As a rule she lapses into a state of light narcosis from which she begins to emerge in about three quarters of an hour. The second dose of scopolamin gr. 1-150 is now given and repeated every hour until the child is born. Occasionally the dose has to be increased to gr. 1-300 of scopolamin and in a few refractory cases morphine may be needed again as well as several whiffs of chloroform. The author points out that the mental attitude of both the medical attendant and the nurse has a particularly powerful influence over the patient as in this condition she is extraordinarily susceptible to suggestion. At the height of her pains the narcotized patient may rouse herself and make a great outcry only to lapse again into the

narcosis as the pains subside. Even an obstreperous patient may have no knowledge of her pain. When the head is on the perineum the author advises the administration of a few whiffs of chloroform. He states that the puerperium is uniformly prosperous due to the absence of exhaustion. Lactation is normal and recovery more rapid than usual due to the absence of shock and fear. The memory tests as used by Gauss are not relied upon; routine hourly injections of scopolamin being given.

During the first quarter of the year 1913 at the Maternity Hospital in Edinburgh the author gave scopolamin morphine narcosis to one hundred and four patients of whom sixty-four were primiparae and forty multiparae. The results in amnesia and analgesia are given in the following table:

| | P 1 | m C | a C | n C | t C |
|--------------------|--------|--------|--------|--------|--------|
| Complete amnesia | 50 | | | 5 | 1 |
| Partial amnesia | 30 | | | 40 | |
| No amnesia | 11 | | | 1 | 1/2 |
| Complete analgesia | 50 | | | 1 | 1/2 |
| Partial analgesia | 38 | | | 40 | |
| No analgesia | 3 | | | | 1/2 |

The term amnesia is used here to designate the mental condition in which there is complete loss of memory for all events after a certain injection until consciousness is regained after delivery. Of the patients treated 5 per cent derived some benefit.

Effects on labor. Pains that are irregular are rendered steady and regular by the use of the narcotic. The length of the first stage is affected very little. The second stage is prolonged especially in primiparae but the easy and gradual dilatation makes for less shock and fewer perineal lacerations. Twilight sleep increases the number of forceps cases which in this series was 24 per cent. The third stage is very little affected. In about half of the cases the placentas were expelled spontaneously within an hour. Two were removed manually and the rest expressed from the vagina.

Effects on the puerperium. The period of recovery was shorter than in the case of women in ordinary labor. No disturbance of lactation was observed.

The use of chloroform. Some patients in twilight sleep are so well under control that they can be delivered without the aid of a general anesthetic. In the case of others chloroform is necessary when the head is on the perineum.

Effects on the child. In the one hundred and four labors in this series ninety-eight living and seven dead babies were delivered. The child is likely to be delivered in a state of twilight sleep and therefore a source of anxiety to the inexperienced. It will shortly recover.

Effects on sleep. Nearly all the patients slept after the labor was over from four to ten hours and awoke feeling refreshed. Four common clinical features of the narcosis are thirst, flushing of the face, mental confusion and restlessness. Marked

est) u ed in fou te n ca es of the one hund d nd f u helive es

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The l rro per tion s ndicated he e there a p b blty f infect n

Caesar an section s not so difficult nor s it es pecially product ve of shock Two technic l errors should be v oided the e posu e and handlng of the bo el a d the pilling of the blood and liquor amnu int the abdomen nd the unnecessary l ss f blo d e ther du ing operation or from subsequent leakage from the ut i e sutures Seco dary rup ture of th uterus should be gua ded ag nst by g od mu ular app siti n by at least three ro s of utures nd a eful peritone l cove ing The Wel st techn que s of gre t value in pr venting lern The hld sh uld be del ered by the feet as n bre ch lcl v l tuatr n or ergot may be injcted hypod mically just as the uterus is being npted or immediately bef re l trap toneal method are somet mes valu ble In selecting the eatme t the t of lab sh uld le o idered unl th dications f r prompt interferenc are pr nt

The author g es a b lcf report of abd ominal del er o ng a period of five years

L R G m m

MISCELLANEOUS

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th Child and Th Pr nti n v l St J
M d 9 9 5

Ac dng t H st about o per cent of the hld en born d f mmatur t r sph ia atelec t s malform ton nju e n l infect on The st f lks of lfe ho the highest mortality

The p e nt on f many of these conditions must l b ougt about by b tter educat on in obstet c M takes n d gn a e ac ountable for the va t mav itv f b th jur s

B th injur es ca se either the death of the chld disability hi h often make death preferable

In con lusi n the author recommends better p enatal ca e nd mo e intell gent m nagement f lab r the ly emely for this fea ful aste of human lif
H EY B MATH WS

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NDI

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 tounl

I estimate the amount of hammerage to be no relation to the size of the stone.

Hæmorrhage, leucotuberculosis frequently accompanied by pancreatic polypus and the presence of tubercles in the

Patients with tumours usually have loss of eight
and implantation of sensation of heaviness in the in-
The diagnosis must be made by cystoscopy. If
the tumour is in the middle during the feeding the
bladder can be seen coming from the ureter dra-
The effect is likely. If the haemorrhage is severe
in the tumour, if a nephrectomy should be
performed. In fact, the author is the ideal bl-

Wh th h no ha_h l e to a dehn te lesion
 P p t t tm nt to the lesion shoul be
 lo t A P I S

| Wilt d | C S | Recu | t R n l Cr | J l |
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and n r f act n l l s f sleep

Th p t t f e l f m y m p t o m s e m l l g
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c f t h r u m c a u e d r n l o f c s i m i l a t y t h a t f o
h b t h e p a t t e d t h e s p i r a l d h c h i n
t h a u t h p i n o n a r n c u t a n a l p a s i m
t l o r t h t c e h y p e a m a n d t h o u g t o s
t m a p a l l o g e c h a g

The t e m t co t l f r t n bed l ight diet
n s d ng t f ligu l d uresi l mild
dal purgn l C

Wild W P R u n c of St n in tl Kidn y
Mt Op at n C l f St J M d 9 9 8

The frequency of high stones re-form in a
kind of form, they have been removed, a
matter of importance. The author states
that the possibility of recurrence and the
effect of emigrating the physician's obser-
vation in middle-aged and the patient.

Tha u e f t h e f e c t n o r t h e m e a s b y h c h
t i s n t n e f t e t h e s t o n i r e m o v e l a
p t e t i c t o A s a r u l e t h i s i s a l a c k o f p o p e
l r a i e f o m t s s l e t u c t i n e t h r t h e p e l v i
o n t h e k d n y p p e r W h a l a r g e a r e a o f
t i e h a d b e e n d e s t r y e d n d t h v i d y d s
e l l t h e s l s l k e l h o f s t e f o m a t i o n t h a n
h e n t h e c a t y t s s m a l l a n d p o o r l y d e a d

Diet and medication have little effect in preventing recurrence but the patient should keep on a

good health as possible by eating a plain mixed diet avoiding alcoholic drinks or too much tea or coffee and regular exercise and drinking plenty of water.

In the case of pelvic stone the writer suggests that at the time of operation it should be ascertained whether any condition is present such as ureteral kinking from a movable kidney, ureteral constriction or pressure from an aberrant vessel which prevents the pelvis from emptying itself. He advises also opening widely into the pelvis all cavities left after the removal of calculi. After the operation he lavages the pelvis. This hastens the clearing of the urine but as to whether it has any effect in preventing stone recurrence he is unable to say. At times it is a question whether the patient should again be operated upon after recurrence.

In conclusion the author states that it has been his purpose in this article to emphasize the necessity for a better study of cases of nephrolithiasis before and after operation. (OIT (R))

BLADDER URETHRA AND PENIS

Reed C A L. Irritable Bladder in Women. *J. Am. Med. Soc.* 1919 LXXI 33.

Reed claims that irritable bladder in women is a condition which taxes the diagnostician's ability to determine not only the various pathologic conditions on which it may depend but also the actual condition on which it depends in the given case.

Having enumerated the various causes from within and without the writer devotes the greater part of his article to Hunner's ulcer as the etiologic factor which for greater accuracy he calls a punctate ulcer of the bladder.

The liability that the cause may be overlooked and the importance of this ulcer in view of the pain and impairment of health treatment required and benefits to be secured from that treatment demand that it never be left to a presumptive diagnosis.

The diagnosis of punctate ulcer is based on a consideration of the previous history of the case, the present symptoms, the findings of urinalysis and the cystoscopic examination. The history is that of long duration of the condition, persistence in spite of treatment and gradually increasing severity. The symptoms are frequent desire to urinate, painful urination and pain in the bladder with reflex pain the perineum and rectum and often spasm of the sphincter ani and perineal muscle.

The urinalysis findings are generally negative except as to the presence of occult blood which may be intermittent. In certain of his cases the author observed what appeared to be a slight granulation which was suggestive of primary tuberculosis but due to the development of minute cysts with lining of mucous membrane.

The pathology seems to be that of a chronic interstitial process involving all of the layers of the bladder wall encroaching on the epithelium and by cutting off the capillary supply causing macular

necrosis. The ulcers generally involve the anterior wall and the vertex. The underlying deep layer of the mucosa is the seat of a true hypertrophy which by virtue of its permanent character and its influence on the nutrient supply to the epithelium is a determining factor in the incurability of ulcers which show no effective tendency to reparative processes.

The only curative treatment is bold and radical excision of the ulcer bearing area.

In conclusion the author says:

1. Punctate ulcer of the bladder and the pathologic changes associated with it are a definite clinical entity.

The pathologic condition is not only chronic but also irremediable by so called conservative methods.

3. The usual limitation of the ulcer process to the anterior wall and vertex of the bladder makes it surgically accessible.

4. The treatment by excision of the ulcer bearing area is justified by its demonstrated practicability and results.

LOUIS CROSS

Fay O J. Traumatic Rupture of the Urinary Bladder. *Internist* 11 J. 1919 XXXI 46.

From a study of the literature and statistics of a number of well known authors it is evident that subcutaneous injuries to the bladder are among the most frequent of abdominal injuries.

There are three prevalent types of accidents:

1. A blow from some hard object over the bladder region e.g. the kick of a horse, a blow from a fist running against some object with sharp corners.

2. Falling from a height as from a tree down stairs from a scaffolding, or being thrown to the ground.

3. Crushing injuries as when a man is pinned down by some heavy object caught between the bumpers of cars run over by a vehicle or buried in an earth slide.

4. Over distention of the bladder before operation or for the purpose of diagnosis or treatment.

Straining as when lifting some heavy object. The first and third of these groups take in the largest number of ruptures and are in fact closely related in the mechanism of the injury. In the first group the injuries to the bladder are usually isolated though occasionally associated with rupture of the bowel. In the third group in which traffic and railroad injuries predominate there are often multiple visceral injuries with fractures of the pelvis and the long bones as a frequent complication. The majority of bladder ruptures however are to be explained by some single law of physics.

1. A hollow body with elastic walls bursts when these walls are overdistended.

2. Overstretching may be prevented by surrounding the hollow body with a rigid mantle which counteracts the pressure from within.

3. If the counterpressure is removed at a point by the removal of a portion of the mantle

When the abdomen has been opened the free fluid urine blood and exudate is removed as completely as possible with dry sponges. The viscera are inspected and the abdominal cavity walled off. A careful search is then made for the rupture which must be closed in two layers the first suture row including muscularis and serosa and the second serosa only. After the continuity of the bladder walls has been restored the ideal conclusion of the operation is the closure of the peritoneal cavity.

The extraperitoneal rupture is closed by suturing first the muscularis and serosa and then the serosa only no stitches being allowed to penetrate the mucosa. When suture is impossible the wound is picked and drained. The spine of Retzius should be well drained at all events.

Rest for the bladder should be insured by the use of a retention catheter. After operation the patient should be placed in the Fowler position and continuous proctoclysis instituted for the first twenty-four hours at least often longer. The urine should be kept acid to guard against cystitis as far as possible. The retention catheter may usually be removed by the third day and the patient catheterized at two hour intervals if he is unable to void spontaneously. The usual precautions against cardiac and pulmonary complications are to be employed.

THEO DROZDOWITZ

Young H H. Excision of Vesical Diverticula After Intravesical Invagination by Suction a New Method. *S Gynec & Obs* 1918 x 1 125

The author has been struck with the importance of intravesical removal of vesical diverticula when ever possible particularly in the intraperitoneal and retrovesical or subtrigonal types. Thus either an intraperitoneal operation is avoided or the operation is simplified. The extravascular removal of diverticula situated at or near the ureteral orifices (especially those in which there has been considerable suppuration with scar tissue often involving the rectum seminal vesicles ureter and deep pelvic structures) is not only very difficult but is apt to be accompanied by injury of these structures.

The first intravesical method which he employed was as follows. After dilatation of the diverticular orifice a circular incision was made through the mucous membrane around the opening the diverticular mucous membrane being grasped with hemorrhoidal forceps gradually drawn outward and excised. In some cases it was possible to grasp the diverticulum with forceps invaginate it either by traction upon the forceps or with the assistance of a finger outside of the bladder and after it had been turned inside out within the bladder to complete its excision. In large and very deep seated adherent cases however neither of the methods was found suitable and he therefore adopted the following technique.

Invagination of diverticulum by suction and traction intravesical enucleation of the sac of mucosa thus entirely avoiding sharp dissection

and pushing the ureter (if present) back into the bladder intravesical closure extravascular drainage of the region of the diverticulum and plastic operation punch or prostatectomy to cure obstructive cause of diverticulum.

The diverticulum orifice is investigated and if necessary dilated with forceps. Into this orifice a glass tube is inserted to the full depth of the diverticulum and immediate suction with an electric air pump is begun. It is usually evident almost at once that the mucous membrane has been drawn against the orifice. The tube is then drawn very slowly outward for a short distance the suction being continued until the mucous membrane of the diverticulum is seen coming upward inside the glass tube. The glass tube is then slowly drawn out the diverticular mucosa being brought with it and as soon as the end of the tube is outside of the diverticular orifice the mucous membrane is caught with a toothed clamp and the glass tube removed. The intravesical delivery of the diverticulum is then completed by traction the operator using sharp toothed clamps applied at various points around the circumference and then possibly further dilating the diverticular orifice in case the sac is very large and much difficulty is experienced in delivering the whole diverticulum through the small orifice.

When the entire diverticulum has been turned inside out within the bladder a circular incision is made through the mucous membrane around the neck of the diverticulum and the mucous membrane elevated at one point. Then by blunt dissection it is a simple matter to peel away and remove in one piece the entire lining membrane of the diverticular sac. The excised tissue consists merely of mucosa and submucosa. If the ureter comes into view it is pushed back only the thin membrane being removed. A cigarette drain is carried down extravascularly and lateral to the bladder until it reaches the collapsed cavity from which the diverticulum has been removed. The orifice of the diverticulum in the bladder is then closed.

The article is beautifully illustrated. Seven cases of operation by this method are reported.

B S BARRINGER

Marion. Traumatism of the Posterior Urethra

Observed at the Base Hospitals. (Conduite à tenir dans les traumatismes de l'urètre postérieur envisagés dans la zone de l'arrière). *J du M Par* 1918 1919 vii 385

Marion's report was made at the Fourth Meeting of the Heads of the War Urological Services held in October 1918. It is based on his own personal experience and that of others in the treatment of urethral war wounds.

The study of these cases has led him to the conclusion that when there is an obstruction of the posterior urethra due to trauma the end of the canal must be found after resection of the interposed tissue and the canal reconstructed by end to

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In pening up the posterior ureth I reg on the proce lu e giving the best v e is Rochet s method Marion d ls n detail th the e various points ll tr ting the lues of the techniq es th ca es desc b l by various uth s during the war

W A Br 3 3

GENITAL ORGANS

McKenna C M Pathology and Treatment of
Seminovascular and Acute Epididymitis
Ill W J 99 76

McKenna draws attention to the differential diagnosis of minimal vasculitis and postulated that the histological picture of epidermids may be the clue to the diagnosis.

In discussing the pathogenesis of tuberculosis in which the dental tubercle will give a similar picture.

[illegible]

M d d l t n G W S u g r y f t h l s t a t i c G l a n d
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I recommend the following: (1) The patient should be kept on only under the following conditions: (a) When the bladder is empty, (b) the catheter has not been previously employed and the patient complains of very frequent voiding and (c) when the patient has pyrexia followed by chills set in after the introduction of a catheter. These conditions are found in but 73 of the 550 cases.

SURGERY OF THE EYE AND EAR

EYE

Moerno V The Barraquer Suction Extraction of Cataract (Sobre la extracción Barraquer) Siglo 1916 Madrid 1919 XVI 8

Moerno's article is based upon a recent address made by Barraquer in Catalonia. Barraquer is satisfied that none of the methods in vogue for the extraction of cataract is free from grave objection, that the opaque mass cannot be removed without great difficulty and injury to the vision and that the inflammatory conditions generally produced in the interior of the eye add to the complications. His vacuum method of sucking out the cataract with its capsule was reached only after a great amount of experimental work and the perfecting of his instrumentation. Barraquer's procedure gently draws the cataract outside the eye and in every way much more satisfactory than other methods. At the same time it exposes the patient to less danger and trauma than the methods of Smith, Pagenstecher and others.

Barraquer gave statistics of 630 cataract extractions following a first series of 12, which he had done while perfecting his technique and instrumentation. Among these cases there were

| | |
|------------------------|-----|
| Simple extractions | 301 |
| Combined extractions | 289 |
| With conjunctival flap | 456 |
| With previous suture | 194 |

The results obtained were as follows:

| | |
|--------------------|-----|
| Vision from 0 to 1 | 398 |
| 0.5 to 0.6 | 185 |
| 0.1 to 0.5 | 44 |
| 0 | 3 |

The complications and accidents observed during or following operation were

| | |
|----------------------------------|---|
| Hernia of the vitreous | 5 |
| Flap inversions | 2 |
| Capsular rupture | 3 |
| Luxation of lens | |
| Infection | |
| Hypæmia | 7 |
| Hernia of iris | 5 |
| Hæmorrhage into internal chamber | 4 |
| Iritis and iridocyclitis | 1 |

Barraquer recommends the use of his latest model vacuum generator which is regulated by an electric motor.

Moerno states that in the demonstrative operations executed by Barraquer none of the objectionable features attributed to suction extraction were observed either during the operation or afterward. He believes that when its simplicity, rapidity and advantages are fully realized by ophthalmol-

ogists they will be fully convinced that the Barraquer technique is a true perfection of cataract extraction. This method the author calls phacorraxis. W. A. BARRAQUER

Golosine S. S. Benign Intradural Tumors of the Optic Nerve and Their Surgical Treatment (Tumeurs intradurales bénignes du nerf optique et leur traitement chirurgical) Arch. d'ophth. Par. 19 8 x XVI 32

Golosine dislikes the multiplicity of anatomic pathologic forms of optic nerve tumors which various authors have proposed. He prefers to classify these growths simply as intradural or extradural tumors. Intradural tumors originate from the external sheath of the nerve while intradural tumors have their origin in the nerve or under its sheath. He has personally observed 9 intradural tumors of the optic nerve. Six of these were reported in 1904 and 1908. The other 3 are the subject of the present article.

Among intradural tumors which previously have been regarded without exception as pure myxo- or some other type of sarcoma, neofibrations are met relatively frequently which have the character of benign hyperplastic inflammation in the surgical sense. They do not present any danger to the organism except by their mechanical propagation to the central nervous system, a tendency which is unusual.

The author describes the pathology and clinical symptoms of benign tumors of the optic nerve and discusses the best means of treatment. He prefers a subvaginal extirpation rather than the classical method followed by Kronlein. A forked incision is made along the orbital edges. The fascia tarso-orbitalis is then sectioned quite near the bone easily, access thus being gained into the orbit. Digital exploration follows, a temporary resection being made in the external wall of the orbit. This latter resection is done with the scissors without a prior periosteal stripping as recommended by Kronlein. Golosine never sections the external rectus muscle. In the final step the lids are temporarily sutured in order to protect the cornea against possible edema.

Three cases in which this technique was used are described and illustrated. The author believes that the nutrition of the eye and especially of the cornea is better assured by this than by any other method. The operative traumatism can be still further decreased by cutting the tumor through the cutaneous wound without resecting the external wall when this is permitted by the nature of the neoplasm. In two of the cases the æsthetic result as regards the position and mobility of the eye operated upon is unsurpassable and the result appears

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O r r M k r

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Ochsner F H Three Cases of Sinus Disease
Surg Clin Chic 50 1919 11 17

Case 1 Chronic antral disease not relieved by nasal operations Acute exacerbations resulting in arthritis and encephalitis Radical operation performed through the canine fossa and a tube inserted one end of which came out through the nose and one through the opening in the canine fossa Iodoform gauze packing

Case 2 Antrum infection caused by diseased upper molar tooth and followed by an acute frontal sinus infection A probe was passed from the frontal sinus into the antrum showing that this abnormality was the cause of the infection in the frontal sinus following the antral trouble After the antrum was opened through the canine fossa a silk thread with knots of various sizes was tied to the distal end of the probe This was drawn up through the infundibulum to enlarge the opening so as to admit a No 12 French catheter

Case 3 An acute frontal sinus infection following influenza The patient complained of sudden pain over the left temple extending into the forehead The temperature was 102 There was marked tenderness over the left frontal sinus and a drooping of the left eyelid The sinus was opened externally and pus escaped under pressure The abscess had ruptured into the right frontal sinus and also through the orbital plate into the retro orbital space Drainage was inserted after the infundibulum had been enlarged with knotted silk OTT M I RR

Conlon F A Bitemporal Hemianopsia Due to Acute Suppuration of the Posterior Nasal Sinuses *Am J Ophth* 1919 11 92

Conlon reports in detail a case of bitemporal hemianopsia which was proved to be caused by infection of the posterior nasal sinuses Partial recovery followed exenteration of the posterior ethmoidal and sphenoidal sinuses of both sides in which acute inflammation was found at operation

He states that this is the fifth case of bitemporal hemianopsia due to sinusitis reported in all ophthalmic literature Reference is made to the observations of Zander Lawrence Fraquar and Bogojavlenski which indicate that the general belief that the chiasm rests upon the optic groove is incorrect The author states that among the publications of Onodi he has found one plate showing the relationship of it must have been in his own case and Loeb has given us another In both the left sphenoid sinus was seen in close contact with the chiasm and occupying the entire space between the optic nerves

In conclusion he says As we have shown this close relationship of the sphenoid sinus to the optic chiasm to be the rare exception rather than the usual arrangement we can now explain the possibility of its occurrence and at the same time understand the comparative immunity of the chiasm to retrobulbar neuritis so commonly associated with postnasal suppuration J J HOMER

Vail D T Monocular Retrobulbar Neuritis from Hyperplasia of the Ethmoid Bone Report of Three Cases with Operation *Am J Ophth* 19 11 96

The most striking point made in the first part of the article is that the anatomic relations are often so close that ethmoidal disease may cause defects in vision or even total blindness while the nasal symptoms so are slight that it will not be considered necessary to consult a rhinologist Particular attention is called to the fact that after the most painstaking examination of the ethmoidal region the disease may be discovered only by operative procedure To quote the concluding statements on this phase of the subject The disease should be recognized and operation on the ethmoid performed at once in spite of its being normal in appearance The diagnosis is made solely from the ocular findings

The objective findings which establish the diagnosis after the careful consideration of other causes of monocular blindness are given as of two kinds positive and negative

The positive findings are (1) Monocular blindness (2) a sluggish response of the pupil to direct test and (3) dull pain on deep pressure

The negative findings are (1) A normal disc and fundus and (2) a normal middle turbinate

The author's careful study is of the meaning of these findings together with the end product of the disease in the neglected cases (descending optic neuritis) and the excellent results obtainable by early operative interference in other cases three of which are reported show that the prognosis is good as to restoration of vision if the operation is performed during the acute stage and bad if it is delayed until optic atrophy sets in J J HOMER

THROAT

Brown J M Acute Retropharyngeal Abscesses in Children *La Jcoscope* 1919 311 9

Brown reports five cases of acute retropharyngeal abscess in children emphasizing its importance and its seriousness particularly if unrecognized One of the author's patients was undoubtedly choked to death by the spontaneous rupturing of the abscess

It emptied a large amount of thick pus into the oropharynx. A sudden inspiration filled the larynx. Ninety per cent of these abscesses occurred in children under six years of age and fifty per cent between the ages of six and twelve months. The author advises penetrating the bottom through the mouth through the hills heads method. Orr M L

Shambaugh G E. Diagnosis and Treatment of Cerebral Otorrhinology Conditions. 54
Cl. Cl. 8 9 9 6

Shambaugh discusses the diagnosis and treatment of cerebellar ataxia. The deep seated lesions are the basis of the disease. The diagnosis is usually made in the middle of the disease.

C. S. D. R. A. I. Quilley and others. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period is a common complaint. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period is a common complaint.

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C. S. D. R. A. I. Quilley and others. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period is a common complaint. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period is a common complaint. The patient's complaint of a feeling of fullness in the ear before the first of the menstrual period is a common complaint.

Thompson and others. The treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Malgouyres and others. The treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Orr M L

J. K. N. C. Treatment of Laryngeal Stenosis by Corking the Tracheotomy Cannula. 55
p. 90

Jackson emphasizes the importance of qualitative stenosis of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Thompson and others. The treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Orr M L

Not only the physical but the voluntary use of the accessory respiratory muscles is essential in the treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Thompson and others. The treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

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Orr M L

MOUTH

Z. N. L. A. The Use of Oral and Maxillary Appliances. 56
C. 9 9 1 8

The author calls attention to the benefits of the use of oral and maxillary appliances in the treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

Thompson and others. The treatment of the larynx. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint. The treatment of the larynx is a common complaint.

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SURGERY OF THE HEAD AND NECK

Head

C t b t t l h A S I l l
 l m q q p t 344 C C Am M l
 S m t t g b
 R f f t m y t l f t I Atk r
 f m m l q q 90 I C C
 S m f j t
 l p o b 765
 A p o h d I m th th
 t l H E P r r A J l e t k l o
 f l k y i m t l l l f l l —
 A R i m m d s
 H y l l l d h k l k d o I H K
 A l f t M d o
 f l m f t h p o t o l f C C
 B J Am l t H m f o s [460]
 C h l l t m I f l r l f l b th
 D d th B l l t m m S m l d
 l o p l t o s l S
 l l l t b l l t P l S
 m l q
 l t t h d h j th I H l
 A h l t M l o o j 4
 A l f l l l A M d A f
 B l m d q o
 f t m f th 4 l t t l j t m l l l b
 t l m k k l A Z K l j t l
 D g l f c h l t l l l t t l
 S l R K S m m f 8
 A l l j t m n k l t th l
 p l t l t l t l t t y m t I f
 W n d M A J y h k s [460]
 A s l l f t l t l l m h g f m
 t h l g f t h l t l l f t h t l l
 t t h l W t h p t f f l t t f
 b l l b b y l l t t t l t l d
 l l t f l l t h h t l l l
 t f f th b l l m W l L
 M d l
 A t l phy f l l 4 k t f t th
 b t t f W l D Am J R o c t l
 o o 6
 I t t f t n l j j t l H B k r
 J d d l t l t l P o 8
 l l t t m f t l l g t H N
 M o A l b M A o o l 4
 S h e l l f t h d t h l f g m n t l d d
 b r u m f t h t y f t t f N K
 B t M J o o 5 A d H f l l N M
 f t b l l t m m S d h l f o o
 l o
 T h p y t f b l l f t h
 t f t h d r m t F A r l y h u g
 o s 56
 f l p y f t h e b r a l t l W L D [460]
 B l l J h s H p k H p o o x q [461]
 T h t m t f c r a n i o c b l d d j r s f
 f C B C m r N y k M J o o

S t h y f t l f l f t o b t l t h p e t e s
 f B l l f M l f l b l f 7 c a e J H
 N t t l f o s t l t m t f e r t
 t y f f l l M J H s C t r r a d A D F
 S C m f t h f o o 4 D B r a v S u g C l [461]
 C h k o o
 l l t f t t l y l d C B E C k [461]
 S g C l (l g) 47 t b S r g C l [462]
 C t r u t s
 (h) t t t f t l n t h m t l t l f
 H C t I m f l l o o C B E S u r g [463]
 R t t f j l o o C B E S u r g [463]
 C l t l k o o s I I y S R a t e
 S m l o l l p l t J N R U m d
 l C n l o l l 50
 A l m o m f t l p e l j t t l b y f m l
 j t t H M B l l t m m S d
 h l f l s
 C t t h t l l m l C r r
 B l l A d t m l f l o l l m o t f t h t c l
 l t l k k t s t i l l m h m t f t h t c l
 d f f f f f P l y S M f f d
 o o
 l t m t f l r y f t l C l S D E C R
 l t t f n c f l h o p o s 84 P d
 m l y f t f t o o s
 f t h t f t f p e t f m j y m
 f t h t l S k M J f l y
 o
 C h t l f t h m l l y A n d [463]
 B k t t f f t f t h m d b l
 l p e l r f t t h j l d g f t l C o l r d [464]
 C H B B t M J o o 6
 J t m t f r l f f t s f t l f
 A H J t t f c c l l o l P o o
 J 43
 J t l y t f t l l J J M J o d J
 L y f A m d r k n t o
 A d m t y t f t h l J H M a y e r
 l r h o

Neck

S t l f t l p m r y t f m l t e s t
 f t h t l j g l l t l r o s t h t e
 l m p l g A B l l t m m S d c l d e
 P o s l o s B l l t m m S d c l d e [464]
 A u t C C r r m f t h p r m y t d n d l f t
 o o l 15
 C l b m k l l p t d
 P A l R I g f l l o 19 p t d [464]
 J t f l t b a t h s t t f b y
 b t L I L A r J A m M A o o l
 330
 T m t l f t h t h y l g l d a l t h u g f
 t t m t H A L A r r s l e d l o o [465]
 1 7

The goster operation and its result F R KELLO C
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origin occurring in a patient with focal infection and

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sis GREVIER Canad M Ass J 1919 ix 141

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disinfecting by the Dakin method and secondarily sutured
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tation T C BOST and A NEVE Indian M Gaz 1919
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um R DE JONG Nederl Tijdschr v Geneesk 1919
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Th p t d c t f p j t l th h e t
I Sc o v e P l c l R m 9 r o h 7
L t t f p j t l t t d th l l f t h h t [471]
by m d th l t t my BA BIER d c u i n
B l l t m m s o d c h d e l 9 9 l 9 8 c [472]
A p p e t i l t l b y t h t M P t d f
th l t t l f t h l t M P R f m
m d 9 8 x 834 [472]
L t t f t j l f g b l y I
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t b l j t n t R G s a v i c c l A A i i A
B l l t m m s m c d h o p d l r 9 8
l q
Q i h k l l t l v f t p l t s f n t t
C R h k l l l n R m 9 9 c h r [472]

SURGERY OF THE ABDOMEN

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P m l p e t t d l t H H M
W t B t M J o q t l I H
J Int j r t J h t l I H
J Am M A t q l 4 i
Abd m l d I L M H T i A S k
q l
St g l l l ph a e m t h m t t
I l b k l c D L y h i
q 5 o [4 3]
H th gh th f m f W l p t f
J E r J A M A 9 l 4
Th th l h A J H J i v m
M C r p l d u [473]
St l t d f m l h i t l i l
tl D A O S k C l C l 9 9

G s t o Int st n l T act

A t k l m th d f t t th al
I m l R D k D t h m l W l h
q l 4
I t t l p l d m t J B S m [474]
m l A f th f j d b d m n a l t m a l b y
I l f f t H M A R t R d d l S
I m 9 9 44
D f t t f h d f t l d d f
th t m h J H C S th M J 9 9
5 C t g r y v P t B l l m e d l a 9 9
I h k t m b l t d t h f t l l f m t
I F M A c h E p h d f d p a t
d t 8
S g l t m t t f u l f t h t m l A A
S m m d 9 9 x 3
St m h i d d n a l l A l L
f s C h d h l o o 53
D f t t y f g t l G M A E
A r h f d f l p t d t o
Th r v f g t n l j l l t r J
S l R D G H l c 9 9 30 [475]
I n t f l t h y p e t f l g t r h
l th b t l t m h k p t f J W O
J M r i M A o o 53
L t t a f t h t m h c a l m p l
m a y m t t C D x r d E D m L y o
m d 9 9
G t n t t m u d l l x th th
p o t f c M C A m J 9 9 3

M l l j j l t r t m t f t j y l c
l B v k D u t h m d W h h r 9 9
I l l m n d t j j c l f i t l f m p e p t
l l l f g t n t j y C s r
I d D M r B l l t m m S c m d
d h o r d f o l 3 d l l l C r r
R d l g n m p t m f d l l l
R d m d v l a t 9 9 7 P L c e f
S k l t m t f l l l u l
J d l l l l t o o
I m m f t h t l p o t f t h d d m
C D H A m J M S 9 9 l 8 [475]
T l t t t l g n f d o d l l
t C B C d A h l m l d l l p
t g 8
C m l m n t l j j t m y A I M k i s o M d
H l o t i
D f f t t m m f l t f c t t
t t f t j j m v I z E v i D e t h e
m l W h h o l
O b t n f t h l m l t t b l l r t
A D B S C l C h 9 9 75
I f t t f t l l j f t t y h d
f t h t j t C W L E v i o I
v l M J 9 9 3
R l t f t h j p e d J p T P l
A l d I t R o o 6
T l t p th d f p p e d t
C J l A m J l t g l o o 78
R o f f t l p l d th t b d m e J T
l L r J A k M S 19 9 63
A t p l l t t l g d J D u b C B l
f h A r t o 8 l
A p e d t m o H D C u s a r S m
m e l 9 8 48
Th l l f l y m p h d l y p e r p l f t h
p l l D S l M C A E R G J A m
M A 9 9 l 4 8
G g p p e d t t l g l l p e t t
I r v m d l b l t t o d t h t l l
I r v m d l b l t t o d t h t l l
A p p d l p f t f g l p l d t
p t t d l f t b m l y m t m v
R m l d l S R m o o 78
A t h l t t l e l l f t l l l
S j t t l t t A M x I t M x
S j 9 9 l
t t t l k t l y b t m f t l m l l
t t t P B l l m d l 9 9 x o o
T t m t f t l t l f t l l b y m f l m th
p t A D B S g C l n C h 9 9 80
I t p t R N I u J C r l
M A 36

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W J f h ds d f g e s O Beck D t
h m d W h h 98 l 447
A g m f th t m l g m l l m s l M P k
R g d l t d th f p 90 x 6
F t f th r f m chld e D M
GR Ed b gl M J 90 75
A c f pp t l l t f the leg t t d by
th C l D k m th l d d l y d ut p m r y
f l l F W F r m M l S g o 90

l C d t m l d ab l y f th k H G
Jo r l r t M J 90 6
C l t k m p l t d b y f ct d l g J B
R r A S 90 l
S l t t th s f th k t ated l W l l m s
m th l J A ad B l l t m m S l h d
P 90 t

T f t p p t l t f th k
t t d b y W l l m m th d B E T l l d G
B l l e t m m s l h d P a 90 l 48
l f p t t k d I t p
m th t m d t t t J A b d B l l t
mém S l h d P 90 l
Th l f t t th m l d p th l l l
t m t typ f t l d f t E H S m

N Y k M J 90 5
A f t l h l l ru No é J F d
R d th p 98 3
C m f th fo t f l l g Sp h fl
J H A d J M h t t M S 90
56
M a th g th p t f th L M
C r M l p v l l M J 90 9

Fr t u r s n d D s l o c t i o n s

F t l r t f th l l f th f
t l S r J R f d m l l B
l 90 l 44
T a t m t f f t th th I h m t p p t 4
U D R E P l l P m 90 l t t 4
I m p t d t l f t f th k E D
M o l S C l Ch g 90 7
C l p m t l t h f f t f th l l
A C C l d J m m t 90

Upp m f t p l t H Ko R D t h
m l W h h r 90 l 5
A f f t f th l l f th h m ru
C r s l d m d y rug p t M d d 90

F t f th p p d f th h m ru J H
S E A E A n S 90 l x 47
S m l m th d f d t f l b o f t R

Re d th p 98 37
F ct f l t m ty f th rad D t
R g d l t d th p 90 66
l u d l f l l g t m t d l t n f th
l p b g l 43 R C E l m IE J O t h p

S g 90 19
R p t f th y m h H S c h l l l l M
J 90 x 75

C t l l u f th f m p e l p t f th
h d f th f m r F r R d th p 98

31
Th m t l t y f c f f t d f m H M W
C B t M J 90 4
Th p t o f p t b m p n d f c
t f th f m C B A E X A D B t M J 90

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